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**ABERRANT INTERNAL CAROTIDS AND THEIR
RELATION TO SURGERY OF THE PHARYNX.***

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The possibility of aberrant internal carotid arteries has not been greatly emphasized in medical literature. Anatomical works are about equally divided in reference to their occurrence. Some describe every abnormality up to complete absence of the internal carotid artery, while others describe the usual perpendicular course without further comment.

The majority of modern textbooks on otolaryngology even minimize the possibility of danger from injury to the large cervical arteries through surgical procedures of the throat and pharynx. A sense of security, which may be false, has been established in the minds of many physicians that could and occasionally does result in serious accidents to their patients. It is the opinion of Schaeffer¹ that tortuosity of the internal carotid artery occurs more frequently than is appreciated by most physicians and is probably the underlying factor in fulminating hemorrhages during or after tonsillectomy.

Fisher², who has also made a detailed survey of the subject, has reported anatomical specimens of tortuous internal carotids and has repeatedly observed the presence of large pulsating vessels in the pharynx which he thinks were aberrant internal carotids. He calls attention to the general lack of recognition given this subject and the possible attending dangers, particularly when surgery is being

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done by unskilled surgeons. There has not been sufficient observation made to know what percentage of the human race have anomalous internal carotids, but Demme³ examined 10,000 patients over a period of 10 years for Waldeyer and Fraenkel. Two per cent of these showed pulsations of anomalous arteries in the pharyngeal wall.

The etiology of aberrant internal carotids can give rise to unlimited theorizing as to the development of the human animal. Cheveau⁴ in his comparative anatomy shows that in many mammalia the internal carotid artery is more tortuous than in man, and in some animals it is many times longer than the distance between its origin and its entrance into the skull. Also in ruminants that eat with the head down there is an absence of the internal carotid artery, its place being taken by the rete mirabile, a series of small branches. Quain⁵ reports a case of absence of the internal carotid on one side in the human, its place being taken by smaller arteries similar to those in lower animals. Schaeffer¹ is of the opinion that tortuous internal carotids are a reversion to primitive types; also that they occur more frequently in the female, but it would be unwarranted to say that tortuosity of the vessel is sex-linked in inheritance. Authentically recorded cases up to the present time have occurred in approximately the ratio of two in the female to one in the male. Mortiz Schmidt⁶ states that the anomaly is more frequent in women than in men.

The age of the individual, or atheromatous changes in the vessel wall, apparently have little to do with the presence of tortuous internal carotids. Wood⁷ reports two cases, age 5 and 7 years, in which pulsations of the internal carotids were visible on the posterior wall of the pharynx. Kelley⁸ reported four cases of pulsating vessels in the pharynx, which he demonstrated were abnormally tortuous internal carotids. He thinks it unlikely that so small a vessel as the ascending pharyngeal could become dilated to such a degree, and concludes that pulsations in the wall of the pharynx are frequently masked by muscular movements. One of Kelley's cases was 20 years old and the other three were over 70 years of age. In two of these, microscopic examination was made of the walls of the internal carotid arteries, and no evidence of marked atheroma was found. Numerous other cases which will be referred to later have been reported, representing all ages between childhood and senility.

The internal carotid artery is described by Cunningham⁹ as commencing at the bifurcation of the common carotid opposite the upper border of the thyroid cartilage, at first lateral to the external carotid, then passing behind and to the medial side of the external carotid,

then almost perpendicularly upward to the carotid canal in the middle fossa of the skull. It is in relation posteriorly to the longus capitis muscle, the prevertebral fascia, and the sympathetic trunk. Posterolateral are the internal jugular vein and the vagus nerve. Medial to the internal carotid artery is the wall of the pharynx and the alveolar tissue posterior to it; the ascending pharyngeal artery, the pharyngeal plexus of veins, and external and internal laryngeal nerves. Lateral to it are the sternomastoid muscle, the skin and fascia. Separating it from the external carotid anterolaterally are the stylopharyngeus, the styloid process or the styloglossus muscle, the glossopharyngeal, and the pharyngeal branch of the vagus and sympathetic nerves. Mention is made of its possible absence or abnormal origin, but none of undue tortuosity.

Spalteholtz¹⁰ describes the internal carotid as curved slightly like the letter S, bounded medianward by the lateral wall of the pharynx.

Deaver¹¹ describes it as passing directly upward and states that the artery is not often wounded because of its deep position, although an aneurysm of its upper portion is not uncommon.

Ecyleshmyer and Jones¹², and Toltd¹³, illustrate the internal carotid as passing upward in a direct line between its origin and its entrance into the skull.

Quain⁶ states that the cervical portion may be tortuous, or absent.

Treves¹⁴ describes the internal carotid artery as close to the pharynx, but four-fifths of an inch away from the tonsil, and in comparatively little danger of injury when the tonsil is removed.

MacAlister¹⁵ refers to possible abnormal tortuosity of the internal carotid and says that it may be separated from the tonsil only by the superior constrictor of the pharynx.

Schaeffer¹ describes the normal internal carotid as passing almost perpendicularly upward to the skull at a distance of 2.5 to 3.5 c.m. posterolateral to the tonsil, being separated by loose alveolar tissue and fat. He further states that tortuosity of any type or in any plane, or even absence, may occur, and that at times the artery may be separated from the tonsil only by the tonsillar capsule and the pharyngeal aponeurosis. The thickness of the superior constrictor muscle is variable and may be practically absent.

Gray²⁰ describes the internal carotid artery as running perpendicularly upward to the carotid canal, but occasionally the course may be very tortuous, or even absent.

Sabotta¹⁷ says the course of the internal carotid artery is fairly straight until shortly before entering the carotid canal, where it makes an S-shaped curve.

It is of exceeding interest to note the comment of our modern textbooks on otolaryngology relative to the possibility of injuring the large vessels of the neck during throat or pharyngeal surgery. It would seem that a word of caution, at least, is desirable, particularly when most textbooks are intended primarily for undergraduate or reference instruction. This warning is notably absent in the majority.

Thomson¹⁸ states that much unnecessary dread has been caused by the suggestion that the carotid artery lies close to the base of the tonsil. "As a matter of fact, the internal carotid is separated from the tonsil by the thickness of the pharyngeal aponeurosis, the superior constrictor, the stylopharyngeus muscle, and a quantity of loose alveolar tissue, so that there is an interval of three-fourths to 1 inch from this larger vessel", and for this conclusion refers to the works of Ballenger¹⁹, Robertson²⁰, Moore²¹ and Kelly²².

Hays²³ states that one accident which is greatly feared by the majority of patients undergoing tonsillectomy is hemorrhage, and that such a hemorrhage from an artery is exceedingly rare, the main artery usually being found at the lower pole of the tonsil.

Sluder²⁴ refers to the possible injury of the carotid artery by quoting Schaeffer as having called attention to a sigmoid internal carotid artery and a visible pulsating artery in the wall of the pharynx as a not unknown condition and a possible source of fatal hemorrhage in tonsillectomy.

Kyle²⁵ indicates the possibility of hemorrhage during throat surgery only from an enlarged descending pharyngeal or tonsillar artery, or a dilated venous plexus.

Loeb²⁶ gives a classic description of the relation of the palatine tonsil to the surrounding structures and says that the internal carotid is placed well back and is never closer than 1.5 c.m. to the wall of the pharynx.

Ballenger²⁷ states that the danger from hemorrhage during tonsillectomy is both real and imaginary; it is real in that severe hemorrhage occasionally does occur; it is imaginary as to the reputed frequency of its occurrence and the degree of danger attending it. He refers only to hemorrhage from the vessels passing through the capsule to supply the tonsils and does not mention possible anomalous relationships to the carotids.

Barnhill²⁸ emphasizes possible danger by describing the relation of the carotid and facial arteries to the tonsils: "Usually 2 c.m. separate the carotid arteries from the tonsil, but occasionally one or the other of these great vessels comes closely to the tonsil. The

external maxillary artery also often makes a bend almost directly against the tonsillar capsule, and this artery may sometimes be responsible for fatal hemorrhage after tonsillectomy."

Phillips⁴³ in his work on otolaryngology has to say that, "The chief danger attending operations on the tonsil is hemorrhage which arises from anomalous arterial distribution, or as a result of the accidental wounding of some artery in the surrounding tissues."

Undue tortuosities or aneurysms of the deep cervical arteries, although probably of relative infrequency, do occur and have not been sufficiently recognized, judging from cases reported, in relation to throat surgery. When such anomalies do occur they are invaria-

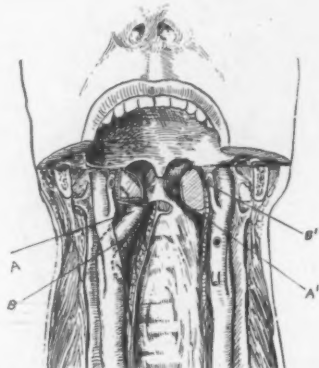


Fig. 1. Drawing of large vessels of neck from case reported. A, Right side. Position of anomalous right internal carotid artery. B, Right side. Lower half of tonsil, superior constrictor muscle and posterior pharyngeal mucosa dissected away and retracted medianward. A', Left side. Shows prominence on posterior wall of pharynx under which is the anomalous left internal carotid artery. B', Left side. Dissection carried down to left external carotid artery and tonsil. Relation of external maxillary artery to the tonsil.

bly brought into closer relationship to the pharynx because the unyielding fascial planes externally prevent expansion in that direction and they are carried medially in the line of least resistance.

Schaeffer¹ reports in detail a case of sigmoid bilateral internal carotids, and mentions having observed others. Kelley⁸ reports four cases of proven tortuous internal carotids with visible pulsation in the posterior pharynx which would easily have been injured during an operation on the throat. Fisher² has seen in the dissecting room two cases of bilateral tortuosity of the internal carotids in the sagittal plane, and one in the coronal. He also reports having observed several cases of large pulsating vessels in the pharynx which he

thinks were anomalous internal carotids. Other cases of bilateral tortuosity have been reported by Lake²⁰, Rowlands³⁰ and Edington³¹.

All anatomical specimens of anomalies reported, that could be found in the literature were bilateral, with the exception of one by Skillern³² from the anatomical laboratory of the University of Pennsylvania, in which there was a spiral tortuosity of the left internal carotid only, two turns of this artery coming in close contact with the faucial tonsil.

In addition to the cases reported from anatomical laboratories, many instances of pulsating arteries in the pharynx, which were

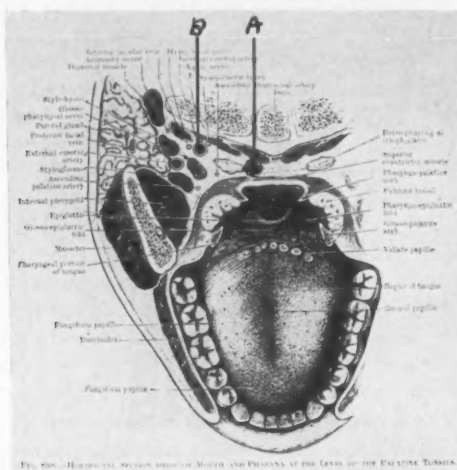


Fig. 2. Horizontal section through mouth and pharynx at the level of the palatine tonsil, from Cunningham. A, Position of aberrant internal carotid artery in case reported, at center of the vertical diameter of the tonsil. B, Normal position of internal carotid artery, as illustrated by Cunningham.

believed to be anomalous internal carotids, have been observed by Barnes³³, Wood⁸, Roop³⁴, Moorhead³⁵, Smith³⁶, Sanderson³⁷, Grif-fin³⁸ and Farlow³⁹.

Case Report: The aberrant internal carotids which form the basis for this presentation were discovered in the anatomical department of the Indiana University School of Medicine. The anatomical specimen was that of a female about 40 years of age, physically well developed, and weighing approximately 130 pounds. Since this dissection was done in the graduate school of otolaryngology, only the vessels of the head and neck were studied, to note the absence of any marked thickening or tortuosity of the palpable vessels. When

the carotid sheath was opened the common carotid was found to be topographically normal, without demonstrable atheromatous changes. It divided into the external and internal carotids on a level with the upper part of the thyroid cartilage, the internal carotid passing almost vertically upward and backward for a half-inch, where it made a turn medially, passing behind the external carotid. The internal carotid continued upward and medially, describing an arc in a transverse plane, passing directly behind and 3 m.m. distant from the lower pole of the right palatine tonsil in direct contact with the superior constrictor muscle of the pharynx. The axis of the artery at its greatest convexity was $1\frac{1}{2}$ inches medial to the axis of the



Fig. 3. Right side. Dissection of neck, posterior view, showing course of aberrant internal carotid artery in direct contact with the superior constrictor muscle. C, Right side. Internal carotid artery showing marked sigmoid curve medianward. C', Center of tonsil, only 3 m.m. distance between the posterior surface of tonsil and internal carotid artery.

artery at its origin (Fig. 1). At this point the artery lay directly between the aponeurotic posterior wall of the pharynx anteriorly and the prevertebral fascia posteriorly. The large postpharyngeal lymph gland lay external to the carotid in its concavity (Fig. 2).

The artery then passed upward and outward, describing almost a semicircle in the same transverse plane, to a normal position (Fig. 3), then passed directly upward to the carotid canal and entered the skull. The upper segment of the semicircular portion passed upward and outward behind the upper pole of the tonsil in direct contact with the superior constrictor muscle, with 2 m.m. intervening between the vessel wall and the capsule of the faucial tonsil. On inspection of the posterior pharyngeal wall of the opposite side a bulging mass was found, and later dissection revealed it to be a

similar aberrant internal carotid artery. This artery might easily have been injured during any operative procedure upon the throat or pharynx, such as tonsillectomy, adenoidectomy, the removal of infected glands or hypertrophied mucous membrane from the posterolateral wall of the pharynx, or the incision of a postpharyngeal or peritonsillar abscess, and it could easily have been entered by a needle during the injection for local anesthesia.

In addition to the aberrant internal carotids there were found what we believe to be unusually long and tortuous external maxillary arteries (Figs. 4 and 5). They arose from the anterior surface of the external carotid arteries above the lingual, passing upward on the lateral surface of the middle constrictor muscle to a point opposite

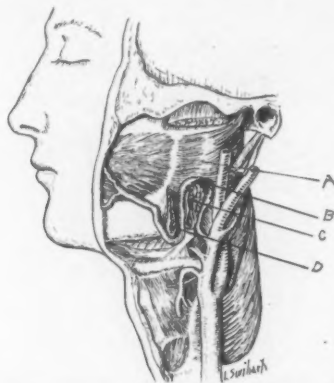


Fig. 4. Dissection of the neck from the left side, showing external maxillary artery and its relation to the lateral wall of the pharynx. A, Superior constrictor muscle of the pharynx. B, External maxillary artery in contact with the superior constrictor muscle for an unusual distance. C, Small portion of parotid gland. D, Mandible, the angle of which has been removed.

the upper and middle third of the palatine tonsil, then curving forward and down, describing an inverted letter U in a sagittal plane, the entire U being in direct contact with the external surface of the superior constrictor muscle. The artery then continued downward and anteriorly into the groove in the posterior part of the submaxillary gland.

This specimen was found early in a series of not less than 60 dissections of the head and neck over a five-year period in the graduate course in otolaryngology conducted by Dr. John F. Barnhill in the Indiana University School of Medicine. It was my good fortune to be able to study all of these specimens and this aberrancy stimulated

further observations on the relationship of the internal carotid artery to the palatine tonsil. The majority conformed to the classic description given by most anatomists, but one other internal carotid was found with an unusual medial curve bringing the artery slightly less than 1 c.m. from the external capsular surface of the tonsil. A further observation was made that in the emaciated cadaver there was less distance between the tonsil and the internal carotid artery, due to less fat in the alveolar tissue. This may be a point worth remembering in doing local injections for surgical procedures in the pharynx.

Since observing this anatomical specimen I have seen two cases of pulsating arteries on the posterior wall of the pharynx which palpation convinced me were aberrant internal carotids. One was in a

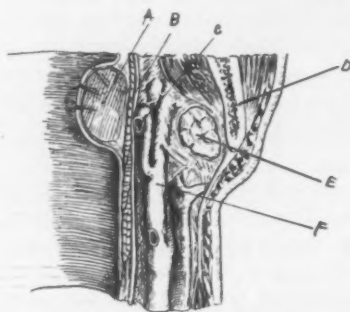


Fig. 5. Transverse section through left side of neck through the center of the palatine tonsil, anterior view. A, Palatine tonsil. B, Superior constrictor of pharynx. C, External maxillary artery in close relationship to the palatine tonsil for an unusual distance. D, Angle of mandible with the horizontal ramus removed. E, Posterior portion of submaxillary gland. F, External carotid artery.

female 45 years of age, and the other in a male 25 years old, neither of which showed evidence of arterial sclerosis. In addition, I have repeatedly observed pulsation in the tonsillar fossae after tonsillectomy. Many of these I have felt were due to undue proximity of the external maxillary artery to the tonsillar fossae.

A knowledge of the possible anomalous position of the vessels lateral to the pharynx is necessary in order to avoid serious accidents during tonsillectomy, adenoidectomy, incision of peritonsillar or retropharyngeal abscesses, or any surgical procedure in the throat or pharynx. Sebelean⁴⁰ reports a death from fulminating hemorrhage in a young girl following tonsillectomy by an expert surgeon. A judicial necropsy was done and a large tear was discovered in the internal carotid artery.

Accidents of this kind are undoubtedly rare in the practice of expert otolaryngologists, but surgery of the throat is being done by many general surgeons, pediatricians, general practitioners and others who are not skilled otolaryngologists, and it is probably true that few cases where death occurs from hemorrhage during tonsillectomy or throat surgery are reported and recorded in medical literature. On account of the tragic nature of a death due to tonsillar hemorrhage it is difficult to get any kind of a report, particularly from an unskilled surgeon, on account of the fear of criticism. It seems probable, however, that death does occur more frequently than is believed.

Within two years I have a personal knowledge of five cases in which death occurred from hemorrhage at the time of or shortly after surgical operation on the throat. These all occurred in Indiana and came to my notice without any investigation, and none is recorded in our literature. I wish briefly to report these five cases. It has been impossible to obtain satisfactory description of these accidents from the operator in each instance, but the histories herein recorded are authentic and as nearly accurate as the excitement during the tragedy permits.

The first case was a death due to a fulminating hemorrhage during tonsillectomy. This description was furnished by the anesthetist: Tonsillectomy on an adult under general anesthesia was being done by a general surgeon, who had done repeated tonsillectomies. After the first tonsil had been removed the surgeon inspected the tonsillar fossa and called the anesthetist's attention to the fact that a mass remained in the fossa. This he grasped with the forceps, passed a snare wire over it and cut it off. A dramatic scene ensued. A fountain of blood shot out of the patient's mouth instantly. The mouth and upper respiratory tract filled and overflowed. Attempts to stop the hemorrhage were futile, and the patient was dead in one or two minutes. Postmortem examination was not done in this case, and it would be impossible to know definitely what vessel was injured, but the anesthetist was firmly of the opinion that it was a carotid. It would be reasonable to suppose that any vessel producing a bulging mass into the tonsillar fossae, and hemorrhage sufficient to cause death in from one to two minutes, must be a carotid, and likely an aberrant one.

The second case was that of a child on which a tonsillectomy was being done under general anesthesia by a general surgeon, who had regularly done tonsillectomies for several years, this description being furnished by the physician who referred the case and who was

present at the operation. Immediately after the second tonsil had been removed a profuse hemorrhage began which the surgeon was not able to control, and death occurred from hemorrhage in five minutes or less. Necropsy was not performed. No opinion was had as to the exact vessel which was injured, but it would not be reasonable to suppose that uncontrollable hemorrhage causing death in five minutes could come from any of the smaller arteries in or near the pharynx.

The third case was a child in which a general practitioner of several years' experience, who frequently removed tonsils, did a tonsillectomy under general anesthesia. Hemorrhage was not fulminating, but persistent at the time of operation. Finally it was thought to be controlled and the patient sent to the room. Bleeding either continued or recurred shortly after. One hour later the physician was located and recalled. He attempted to stop the bleeding but was only partially successful, and the patient died two hours after the tonsillectomy from hemorrhage. No examination was made after death and it is not possible to know what artery was injured.

The fourth case was that of a child upon whom tonsillectomy under general anesthesia was done by a general practitioner of limited experience, in the home. The operation was done at 11 a. m., and the child placed in bed. Some bleeding was obvious until the patient began to regain consciousness, after which there was intermittent vomiting of large quantities of blood. The physician was recalled twice during the afternoon, but assured the parents there was no need for alarm. At 6 o'clock the child died from blood loss and necropsy was not performed.

While it is not possible to know what arteries were injured in Cases 3 and 4, we do know that serious hemorrhage from the arteries supplying the tonsils is rare in children. It would not seem unreasonable to suppose that either might have been due to injury of an unusually tortuous external maxillary artery.

Case 5 was a man of about 45 years, who presented himself in the office of an otolaryngologist of a few years' experience, with an inflammation and swelling in and around the tonsil and posterior pharyngeal wall. A diagnosis was made of a postpharyngeal or post-tonsillar abscess, and it was decided that incision for drainage was advisable. Application of a 4 per cent cocain solution was made to the lateral wall of the pharynx and an incision made behind the tonsil. A severe hemorrhage began immediately, and despite the efforts of the operator and a well-known otolaryngologist, who was called from a nearby office, the man died from hemorrhage in the

office in four or five minutes. This description was given by the otolaryngologist who incised the abscess, and his skill and knowledge is sufficient to warrant the opinion that he did not injure a normally placed vessel. Unfortunately, a postmortem examination was not done.

This latter case recalls the comment by Wood⁷ on one of his cases: "If in such a case a retropharyngeal abscess coexisted, or a suppurative peritonsillitis were to develop in the posterior position, the surgeon, having done his duty by giving vent to the pus, might easily find himself called upon to check a most embarrassing hemorrhage."

A knowledge of anomalous vessels in relation to pharyngeal surgery may have a very pertinent medico-legal aspect in case of accident. A physician cannot be held responsible for anomalous anatomical conditions, but as Harris⁴⁰ quotes from the medico-legal principles of the Medical Society of New York: "A physician is liable for an injury to his patient resulting from want of requisite skill or knowledge."

Requests for information concerning malpractice suits following throat surgery were sent out by Harris⁴⁰ in 1925 to 300 otolaryngologists, and to the secretaries of medical societies. From this, 124 suits were tabulated, and of these, nine were the result of deaths due to hemorrhage.

The possibility of serious accidents occurring from the injection of drugs, used in local anesthesia, directly into the bloodstream, in my opinion, is of considerable importance. The abnormal proximity of the cervical vessels to the tonsil make an accident of this kind more likely.

Lundy⁴², in a report of difficulties attending local anesthesia at the Mayo Clinic, says that deep cervical block was done in 725 cases. No fatal accident was encountered, but if the solution is injected into the vertebral artery the condition of the patient will instantly become critical. He also states that the use of relatively large doses of epinephrin has been most unsatisfactory in his hands. I have been of the opinion for some time that fatalities, or the sudden shock which sometimes attends tonsillectomy under local anesthesia, may be due to injection of the anesthetic directly into an artery or vein. Trussler⁴³ and myself have been able to produce symptoms of violent shock and even convulsive seizures in dogs by the injection of relatively small doses of adrenalin and novocain into the carotid artery. We also produced the same effect with adrenalin alone. Our experiments would indicate epinephrin to be the more dangerous of the two when injected into the bloodstream.

CONCLUSIONS.

1. Aberrancies of the internal carotid arteries probably occur more frequently than is realized, and their occurrence invariably brings the vessel closer to the tonsil and pharynx.

2. Textbooks on anatomy, and particularly on the ear, nose and throat, do not give sufficient recognition to such anomalies.

3. A knowledge of possible anomalous cervical vessels is important from the standpoint of surgery of the throat, from a medico-legal standpoint, and from the possible danger of accidents due to injection of drugs used for local anesthesia into a blood vessel.

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DUCTUS NASOLACRIMALIS-SINUS MAXILLARIS RELATIONS. AN ANATOMICAL AND CLINICAL CONSIDERATION.*

DR. JAMES E. DAVIS, Hartford, Conn.

That the nasolacrimal duct lies medial to the maxillary sinus is well known. It is also generally known that that portion of the nasal wall of the sinus containing the nasolacrimal duct frequently bulges into the sinus cavity, producing a marked projection, the lacrimal eminence. Viewed from the sinus cavity, this eminence has the effect of constricting off that portion of the sinus cavity lying in front of the eminence from that portion lying behind the eminence. This conception seems especially pertinent when casts of the maxillary sinus are studied (Fig. 1b). Beginning in the most superior part of the anterior portion of the nasal wall of the sinus, the lacrimal eminence extends obliquely downward and backward and becomes continuous with a lateral horizontal bulging which marks the position of attachment of the inferior nasal concha, whose processus maxillaris enters into the formation of the medial or nasal wall of the sinus. Anterior to the lacrimal eminence, and between it and the facial wall of the sinus, there is formed a recess, the recessus prelacrimalis, of varying width and depth, depending upon the angle at which the facial wall meets the nasal wall of the sinus, and the extent of cavitation of the frontal process of the maxilla.

The frequency with which a lacrimal eminence and the accompanying prelacrimal recess are present in the sinus, and their importance in the surgical treatment of disease of this sinus, are facts which apparently are not universally recognized. The standard texts of anatomy in English, Gray, Cunningham, Morris and Piersol, while describing the medial position of the duct in relation to the sinus, do not mention the lacrimal eminence. In the current literature we have been able to find but the briefest reference to the condition. Schaeffer¹ states that "not infrequently the canal throws a portion of the mesial or nasal wall of the maxillary sinus into columnar relief" and that the sinus is enlarged by "extension of the maxillary sinus into the frontal process of the maxilla (recessus prelacrimalis)", and several of his illustrations show this condition very

*From the Department of Anatomy, Graduate School of Medicine, University of Pennsylvania.

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clearly, but he places no especial emphasis upon either point. Til-laux² and Rouvière³ mention the prominence on the sinus wall caused by the nasolacrimal duct. Zuckerkandl⁴ describes a recess between the prominence of the infraorbital canal and the facial and nasal walls; this is fairly comparable to the prelacrimal recess in some of the specimens we have examined. Whitnall⁵ mentions the lacrimal eminence and describes the prelacrimal recess as being bounded by the nasolacrimal duct medially, the infraorbital canal laterally, the anterior superior dental nerve inferiorly, and the roof of the sinus superiorly. He examined 21 maxillae and found such a recess in five cases. The illustrations of Béraud⁶ show the lacrimal eminence and prelacrimal recess very definitely, but neither is mentioned in his writings. Skillern⁷ and Hajek⁸ mention the fact that a prelacrimal recess may be present and may, because of the narrow deep angle, be a considerable obstacle to complete removal of all diseased tissue in radical operative procedures upon the sinus.

In order to determine the frequency with which one may expect to encounter a lacrimal eminence and irregularities of the sinus wall in relation to the nasolacrimal duct, we have made a study of 50 maxillary sinuses. The material for this study comprised most of the heads available from anatomical courses during the year and includes specimens from both white and colored races. Records of the age and sex of the individual cases were not available, but it was possible to tell in most instances whether the subject was young or old, male or female, white or colored, and a comparison of the specimens seemed to show that the subjects under consideration are not influenced by these factors. The majority of the specimens studied consisted of only one half of the head. Where the whole head was available comparison was made of the paired sinuses, revealing that not only are the sinuses not usually bilaterally symmetrical, but also that the lacrimal eminence and prelacrimal recess may be decidedly dissimilar on the two sides. In 30 of these 50 specimens there was present a very definite bulging laterally of the medial wall of the sinus, those specimens which showed only a slight eminence being excluded. In several of the specimens the medial wall bulged into the sinus cavity to such an extent that only a narrow aperture remained between the medial and facial walls. In 25 of these 30 specimens, a well marked prelacrimal recess was present. The contour of this recess depends upon several conditions, namely, first, the angle at which the facial wall meets the medial sinus wall; second, the extent of the protrusion of the lacrimal eminence into the sinus cavity; third, the direction of the eminence and its position in relation to the nasofacial angle of the sinus; fourth, the extent of excavation

of the frontal process of the maxilla; and fifth, the position and prominence of the infraorbital canal on the roof and anterior wall of the sinus.

If the facial and medial walls of the sinus meet at an angle closely approaching a right angle and the lacrimal eminence is not situated too far anteriorly, the recess is quadrangular in shape and is easily accessible when the sinus cavity is explored through the facial wall (Fig. 2). This condition was encountered in only two of the 30 specimens.

If the facial and medial walls meet at an acute angle the recess is triangular, with the base directed medially, and the apex a narrow fissure between the facial wall and the lacrimal protrusion (Fig. 3).

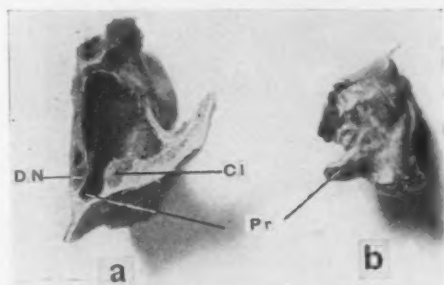


Fig. 1. a, Superior half of maxillary sinus viewed from below; b, cast of a sinus of similar configuration, also seen from below. DN, ductus nasolacrimalis in section; Pr, recessus prelacrimalis; CI, canalis infraorbitalis in section.

In such conditions the recess becomes extremely difficult to reach and can be explored satisfactorily only by the removal of more of the maxilla or by the use of a specially curved small curette. Fifteen examples of this type were found.

Variations in the configuration of the recess were also noted, depending upon the direction of the nasolacrimal duct and prominence. Most of our specimens showed the general direction of the duct to be that described by Schaeffer¹, namely, a line extending obliquely from the lacrimal fossa to a point on the alveolar process of the maxilla, corresponding to the interval between the second premolar and first molar teeth. Only the upper portion of the eminence corresponds to the nasolacrimal duct. Below this portion, in most specimens, the eminence becomes progressively broader (Fig. 2) and this broad portion corresponds more or less to the inferior nasal meatus.

Depending upon the extent of this broadening of the eminence inferiorly the prelacrimal recess becomes more or less cone-shaped, with the apex directed toward the bridge of the nose, the apex being wider or narrower according to the contour of the face. The width of the base is dependent upon the direction and breadth of the lacrimal prominence.

In the 30 specimens that showed a definite lacrimal eminence there was very little variation in the degree of prominence, the distance between the facial and nasal walls of the sinus apparently being dependent more upon the contour of the face and the lateral extent of the inferior nasal meatus than upon the prominence of the lacrimal eminence. In only two specimens did we encounter an extreme

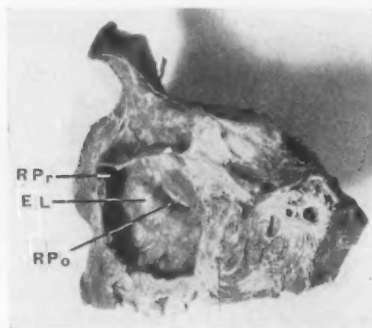


Fig. 2. Nasal wall of maxillary sinus after removal of facial wall. EL, emfuentia lacrimalis; RPr, recessus prelacrimalis; RPo, recessus postlacrimalis.

degree of bulging of the medial wall and in each of these, in addition to the prelacrimal recess, there was a deep pocket dipping behind and medial to the eminence, the postlacrimal recess (Fig. 2).

The depth of the prelacrimal recess is influenced by the cavitation of the frontal process of the maxilla as well as by the degree of prominence of the eminentia lacrimalis. In the 25 specimens exhibiting a recess, varying degrees of cavitation were encountered. If cavitation is slight the depth of the recess equals approximately the mediolateral thickness of the eminence. (There is, however, one condition where this statement does not hold true, namely, where the nasolacrimal duct lies in such close relation to the anterior facial wall of the sinus that its lateral bulging obliterates the angle between the facial and nasal walls; in such cases there is no prelacrimal recess

and the only evidence of the intrusion of the duct is the depression posteriorly.) As cavitation extends, the recess becomes deeper and extends far into the frontal process, either as a narrow fissure or as a finger-like process. In one specimen we found a shallow recess extending upward almost to the frontomaxillary suture (Fig. 4).

The course of the infraorbital nerve and the effect of its canal upon the configuration of the prelacrimar recess and interior of the sinus is extremely variable. In the majority of specimens the nerve courses along the floor of the orbit, lying between the bone and periosteum on the orbital surface or in a bony canal, and emerges through the infraorbital foramen without being evident on the walls of the

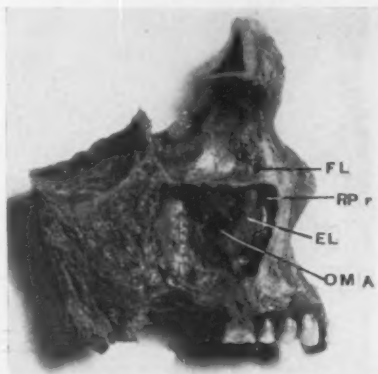


Fig. 3. Nasal wall of maxillary sinus viewed from lateral side. FL, fossa lacrimalis; EL, eminentia lacrimalis; RP r, recessus praelacrimalis; OMA, ostium maxillare accessorium. Note the proximity of the facial wall to the lacrimal eminence.

sinus cavity. In a goodly number of specimens this condition does not prevail, and the bony infraorbital canal bulges into the sinus cavity, forming a very definite prominence on the orbital or facial wall, or both (Fig. 1a). Occasionally the canal crosses the sinus cavity as a bridge, leaving a hiatus between it and the orbital and facial walls. Infrequently the canal branches so that the inner walls of the sinus show two or more well marked ridges that course in different directions. In several specimens we have found a prominence of the infraorbital canal in such close relation to the lacrimal eminence that only a narrow space separated them, the prelacrimar recess thus being almost entirely cut off from the remainder of the sinus cavity (Fig. 1). We have also seen branches of the canal that

took an almost horizontal course and formed a shelf on the sinus wall overlying the recess, so that its exploration from below was practically impossible. This observation is similar to that of Whinnall⁵, wherein he describes the anterior superior dental nerve as forming the lower boundary of the recess. In other specimens we have found falciform septa extending between the infraorbital canal and lacrimal eminence, completely obscuring the prelacrimal recess in the greater part of its extent. When the course of the nerve is nearly midway between the medial and lateral angles of the orbit, the usual location, the protrusion of the canal into the sinus cavity does not

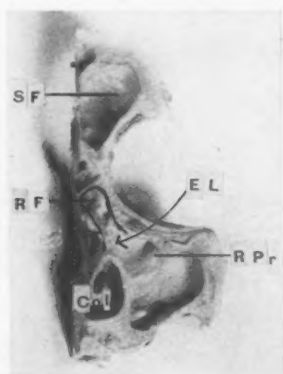


Fig. 4. Anterior portion of maxillary sinus opened in a line extending obliquely downward and backward from superior part of frontal sinus to canine fossa. SF, sinus frontalis; RF, recessus frontalis sinus maxillaris (heavy lines), continuous with RPr, recessus prelacrimalis; EL, eminentia lacrimalis; CoI, concha inferior in section.

influence the prelacrimal recess and it is of importance only in so much as it makes pockets on the sinus wall, except in those cases where the sinus cavity is very shallow, due to approximation of the walls, in which instance the infraorbital canal and the lacrimal eminence more or less completely close off the prelacrimal recess from the remaining posterior portion of the cavity. One specimen shows the infraorbital canal located far laterally, almost at the external border of the orbit, and bulging into the cavity to such an extent that only a narrow fissure remains between the sinus cavity proper and its extension into the zygomatic process of the maxilla.

That portion of the sinus cavity directly surrounding the lacrimal eminence is frequently further modified by the presence of partial falciform septa of mucous membrane which may have bone between

the two layers of mucosa in whole or in part. These septa extend from the facial or orbital walls or from both walls to the eminence, so that the anterior superior portion of the cavity becomes a distinct pocket that may easily be overlooked. One specimen of particular interest showed a thin bony partition attached along the orbital surface at the edge of the infraorbital canal and extending across the sinus cavity to the facial wall, completely obscuring the superior half of the lacrimal prominence, and enclosing above it a recess of considerable size, whose only outlet was a narrow fissure along the anterior nasal wall.



Fig. 5. Anterior portion of maxillary sinus opened by coronal section to show prelacrimar recess and partial septa, viewed from behind. F, sinus frontalis D; ductus nasolacrimalis in section near lacrimal fossa; EL, eminentia lacrimalis; RPr, recessus prelacrimaris; S, septa.

In the prelacrimar recess itself, partial septa are occasionally found, the greater number being in the horizontal plane and forming shelves, one above the other, across the recess (Fig. 5).

CLINICAL CONSIDERATIONS.

The variations of the relations of the nasolacrimal duct and maxillary sinus cavity and of the configuration of the prelacrimar recess are the most important ones that one encounters when investigating the sinus. Their frequency and importance should be recognized by everyone attempting radical operative procedures upon the sinus. To overlook diseased tissue in such recesses and pockets will most likely result unsatisfactorily and most certainly in a delayed healing process.

It should also be borne in mind that when the lacrimal eminence is considerably in relief, its bony wall is likely to be thinned accordingly, and may be broken through easily with the curette with serious damage to the nasolacrimal duct.

By remembering that the thin-walled infraorbital canal frequently bulges into the sinus cavity and may be entered easily, injuring the infraorbital nerve, one may avoid it and prevent the disagreeable prolonged facial and alveolar anesthesia that occasionally follows a radical maxillary operation, usually attributed (probably wrongly) to injury to the nerve filaments during periosteal elevation.

SUMMARY.

Attention is called to the high incidence in the maxillary sinus (30 cases out of 50 specimens in this series) of a prominent lacrimal eminence and associated prelacrimal recess.

Evidence from the series of specimens examined indicates that this commonly unrecognized prelacrimal recess is a normal finding.

Emphasis is placed upon the clinical bearing of these anatomic relations.

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179 Allyn Street.

**SINUSITIS IN CHILDREN: AN ANALYSIS OF THE
CASES UNDER 16 YEARS OF AGE ADMITTED TO
THE WARDS OF THE MANHATTAN EYE, EAR
AND THROAT HOSPITAL DURING THE
YEARS 1927-1928.***

DR. SAMUEL McCULLAGH, New York.

There can be no doubt that the recognition of disease of the accessory sinuses in children has become much more general in the past decade, especially its role as a focus of infection in other conditions. However, the continued and continuing failure to recognize and treat the incipient and mild cases in childhood still leads to the occurrence of severe or intractable cases in adult life, plus the complications incident to these types. The report of E. P. Fowler on "The Incidence of Nasal Sinusitis with Diseases of the Ear, with Report of 100 Cases in Children" (*Arch. of Otolaryngology*, Feb., 1929), is very carefully worked up and a valuable contribution to the literature on this subject. In summarizing his report, he states that 57 per cent showed moderate or severe involvement of the nasal sinus spaces, and 86 per cent showed positive pathologic changes in the sinuses. The ages ranged from 2 to 19 years. He says, "Without X-ray examination only a few of the conditions could have been correctly diagnosed." While most of us are very loath to make a diagnosis of sinusitis, especially in children, upon the X-ray findings alone, in view of the fact that the interpretations were made by so experienced a Roentgenologist as Dr. F. M. Law, all should be convinced of the broad accuracy of the report.

During the years 1927-1928, 48 patients below the age of 16 years were admitted to the wards suffering from sinusitis as the chief complaint. This qualification is made in view of Dr. Fowler's report. During the same period 907 patients, 16 years of age or older, entered the hospital with sinusitis. Roughly, a proportion of one child to 19 adults, or a little over 5 per cent of the total admissions for this disease. If cases of frontal sinusitis among the older group were excluded, the proportion of children would, of course, be higher. Maxillary sinusitis and ethmoiditis, or a combination, were the only admission diagnoses recorded in the children. The following table shows age groups with the diagnosis:

*Read before the New York Academy of Medicine, Section on Laryngology and Rhinology, May 27, 1929.

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AGE GROUPS AND DIAGNOSIS.

Age	Number	Per Cent	Ethmoiditis	Maxillary Sinusitis	Combined
2 years or under	3	6½	1	2	0
3-5 years inc.	4	8½	2	1	1
6-10 years inc.	16	33½	4	9	3
11-15 years inc.	23	52-1/12	5	15	5
TOTAL	48	100	12	27	9

There were 19 cases with complications, almost 40 per cent, 16 being in ethmoiditis (or combined) (84.25 per cent) and three in maxillary sinusitis (15.75 per cent).

COMPLICATIONS.

ETHMOIDITIS		MAXILLARY SINUSITIS	
Orbital abscess	2	Blurring of optic disk and abscess of cheek	1
Orbital edema	6	Marked diminution of vision	1
Hem. neuroretinitis	1	Metastatic abscess	1
Retrobulbar neuritis	1		
Papillary edema	1		
Asthma (age 12)	1		3
Polypi (age 8, 14, 14)	3		
O.M.A.S.	1		
	16		

TREATMENT.

ETHMOIDITIS:			
Age	Conservative	Intranasal Op.	External Op.
2 years or under	1	0	0
3-5 years inc.	1	0	1
6-10 years inc.	3	0	1
11-15 years inc.	2	3	0
TOTAL	7	3	2
MAXILLARY SINUSITIS:			
Age	Conservative	Intranasal Op.	External Op.
2 years or under	0	1	1
3-5 years inc.	0	2	0
6-10 years inc.	0	8	0
11-15 years inc.	0	12	3
TOTAL	0	23	4
COMBINED	1	8	0
GRAND TOTAL	8	34	6

All patients were discharged improved. No attempt has been made to follow them up to ascertain the ultimate outcome.

It seems unnecessary to make any comments upon the figures here given. They speak for themselves. The writer admits to great surprise at the very small proportion of sinus cases in children (48) in a total admission to the throat wards of the hospital of 24,305 patients during these two years.

71 Park Avenue.

OTITIC PYEMIA WITH JUGULAR SINUS THROMBOSIS; RECOVERY WITHOUT LIGATION.*

DR. HENRY DINTENFASS, Philadelphia.

My purpose in presenting this patient is to show what may be accomplished in otitic pyemia with conservative measures despite almost absolute indications for radical intervention. Incidentally, the value of the Queckenstedt-Tobey test will be demonstrated as being not only of diagnostic import but occasionally helpful in the problem of treatment.

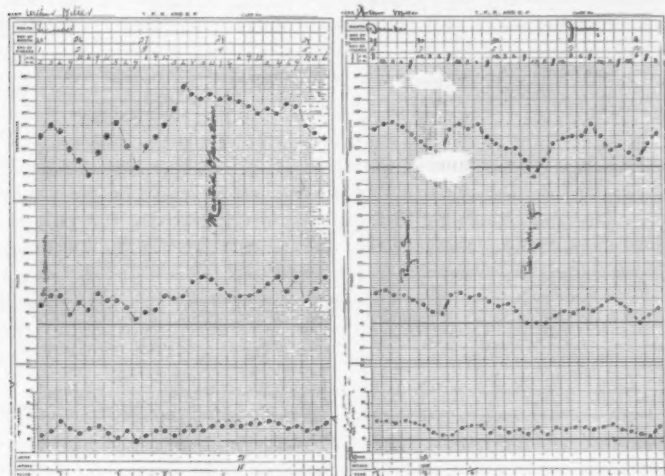
The patient presented a wide range of symptoms and signs including a series of successive positive blood cultures for hemolytic streptococcus, unusually high temperature, mental lethargy and delirium, definite evidences of jugular sinus thrombosis and finally metastasis of the infection to the left elbow joint.

The history is as follows: A. M., male, age 61 years, contracted influenza about the middle of December. After one week of rather severe illness, he developed pain in the left ear, which was followed in 48 hours by spontaneous perforation. Because of the persistence of the pain and the rise in temperature I was called in by the family physician, Dr. Sokoloff. The examination disclosed a bulged tympanic membrane on the left side, with a central perforation exuding a serosanguineous material. The mastoid was exquisitely tender over the antrum and tip. The opening was enlarged immediately and drainage became more profuse. After an interval of several days, in which there was no improvement in the symptoms, he was sent to the Graduate Hospital for study and observation.

On admission, Christmas Day, he was dull and looked toxic. The skin was cyanotic and an unproductive cough added to his discomfort. The white count was 9,000—unusually low—and the differential polymorphonuclears 70 per cent. The medical examination by Dr. Steinfield disclosed a diffuse pneumonitis of the right lung, which was thought to be influenzal in nature. Kernig's sign was absent and there was no rigidity of the neck. An X-ray of the mastoids revealed a moderate clouding of all cells in the left mastoid with indistinctness of some of the trabeculae overlying the knee of the sinus, giving the Roentgenologist the impression of a beginning mastoiditis with suppuration. On Dec. 27, two days after admission and eight days following the onset of the ear affection, the temperature climbed to 105.5° F. and the patient became delirious. The left mastoid involvement was believed to be at least partially responsible

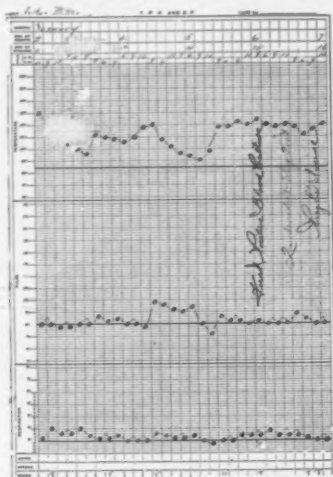
*Read before the Graduate Hospital Clinical Conference, March 11, 1929.
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for this elevation in temperature, so a mastoidectomy was decided upon. The operation was performed on Dec. 28, 1928. On account of the chest condition, local anesthesia, novocain 1 per cent with 10 drops to the ounce of adrenalin, was employed. The operative findings revealed a mastoid of the acute hemorrhagic type with a large tip cell containing seropurulent secretion, the culture of which proved to be hemolytic streptococcus. The lateral sinus was purposely exposed but no pathology was discovered. Iodoform gauze was used for drainage. The patient was returned to bed in fairly good condition and appeared somewhat improved. The temperature for the next eight days, however, varied from 99° to 103° F. There was never any sharp rise or fall in the fever curve, as shown by the



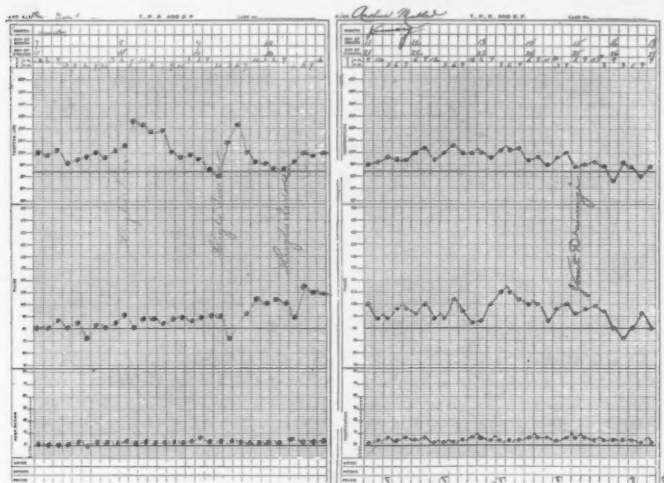
chart, but chills and chilly sensations preceded the elevations and were always followed by sweats. Headache and occasional delirium were present. During this period a rectal condition developed which was treated by Dr. Collier Martin. A blood culture taken on Jan. 5, 1929, to shed some light on the cause of the continued temperature was reported positive for streptococcus hemolyticus, the same organism found in the mastoid. It was evident that we were dealing with a systemic infection, the etiology of which presented several possibilities, the foremost being a jugular sinus thrombosis. A positive blood culture in the presence of middle ear suppuration, although not absolutely diagnostic of a jugular thrombus, constitutes very strong evidence. On the other hand, the normal appearing sinus disclosed at operation would not exclude a clot in the vein. The wound looked

healthy and the discharge from the auditory canal was lessening. The next consideration was the lung involvement. An X-ray of the chest revealed exaggerated and linear markings of both upper lobes of the lung, which the Roentgenologist believed were characteristic of either a tuberculous or Friedländer's pneumonia. Nevertheless, the internist reported an improvement in the pneumonitis and doubted that the trouble could be attributable to the lungs. The possibility of a meningeal condition also confronted us. Although Kernig's and other signs, reference to which has already been made, were negative the continued drowsiness and delirium which the patient still suffered from, accompanied at times by severe headache, were not to be disregarded. It is well known that meningitis associated with a thrombosed sinus is not uncommon.



The fact, too, that occasionally positive blood cultures may appear during the first week of an ordinary acute mastoiditis was to be considered. At this time the eye examination by Dr. Peter disclosed a moderate amount of choked disc. To help solve the problem, the Queckenstedt-Tobey test was performed on Jan. 6 with a rather significant result. Following the usual lumbar puncture, the spinal fluid came out at a pressure registering 8 m.m. of mercury, perfectly clear and with a cytological count of 2 cells per c.m.m. A meningeal condition could therefore be ruled out. On applying pressure over the right jugular or unaffected side, there was a rise of 12 m.m. Over the left jugular area the application of pressure produced an increase of only 4 m.m. in the manometer reading, indicating at once

that the disturbance was in the left lateral sinus. It did not signify complete blockage of the sinus, but showed that the pathology was in all probability a clot of the mural type, which did not close the lumen of the vessel. It might be stated that the test was repeated several times with the needle *in situ* and the results were exactly the same. The importance of this finding could not be overestimated. Not only was the diagnosis definitely established but the question of treatment assumed a different aspect. Jugular thrombosis usually means immediate ligation of the jugular vein. With the Tobey test, which in our case was accurate enough to point out that closure of the vein was only partial, conservative measures could at least be temporarily employed. This plan of treatment coincided with the opinion of



Dr. Walter Roberts, who thought that radical intervention could be delayed and suggested the use of Pregl's iodine. Accordingly, 20 c.c. quantities were given intravenously, once daily, and distinct improvement and amelioration of all the symptoms followed. The mental condition cleared, the temperature dropped to normal, and the appetite and strength increased. On Jan. 11, when the patient appeared well on his way to recovery, he suddenly experienced severe pain in the region of the left elbow. While it seemed of no consequence at first, in several days tumefaction and redness of the elbow joint area were observed. On Jan. 15, the patient was transferred to Dr. Jopson's surgical service. Incisions into the joint were followed by thin, watery pus, the culture of which showed hemolytic streptococcus, the identical organism found in the blood stream and the

mastoid. It is interesting to note that immediately after the joint drainage the blood became negative for the first time, positives having been previously reported on five different occasions. Following this procedure the patient began his convalescence and except for some limitation in the movement of the left elbow made a slow but complete recovery. This brief history and similar conditions in other cases suggests certain phases of importance for discussion.

1. With the development of the newer diagnostic methods the conception of the pathogenesis of pyemia complicating otitic sepsis is changing. Often in atypical cases, where there is no sharp rise and fall in the temperature curve, one is enabled to show the presence of a clot or thrombus in the jugular vein, which formerly was overlooked or not supposed to exist. In the light of our present knowledge it would have been of interest to know what the Tobey

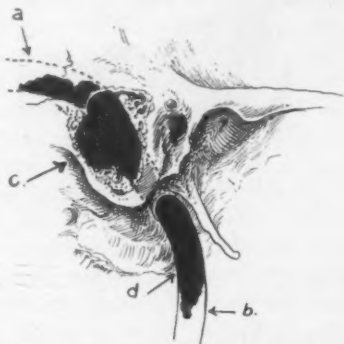


Fig. 1. Semidiagrammatic, demonstrating extravenous type of sinus thrombosis. (a) Lateral sinus. (b) Jugular vein. (c) Condition originating in perisinus area. (d) Clot completely occluding vessels.

test would have shown in those cases of otitic pyemia with metastases reported by various authors several years ago.

2. It is quite possible with the Queckenstedt-Tobey test to differentiate between the two types of sinus thrombosis—the extravenous, which has its origin in a perisinus condition and by a process of extension completely occludes the vein, and the intravenous, in which the pathology originates in the smaller veins of the mastoid bone and forms a partial or so-called mural clot. In the former, the sinus wall and its environment shows evidences of disease, while in the latter the sinus appears perfectly normal, as noted above in the operative findings. In the extravenous type, too, there is a considerable interval of time between the onset of the primary mastoidal disease and the onset of the sepsis, the blood culture usually disclos-

ing some pyogenic organism, but never the hemolytic streptococcus. In the intravenous type the symptoms of sepsis appear simultaneously with the mastoid affection, the blood culture being positive for the hemolytic streptococcus. That the difference in these varieties concerns us from the therapeutic standpoint is quite evident. In the extravenous type, jugular ligation should be immediately performed; in the intravenous variety, exemplified by our case, conservative procedures may give better results.

3. With reference to the possible objections and fallacies to the test, it should be emphasized that an abnormal increase in spinal

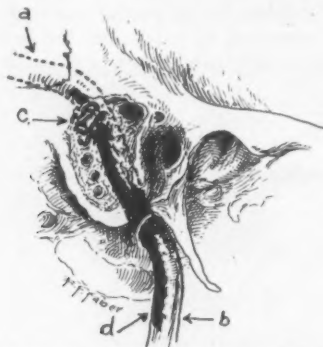


Fig. 2. Semidiagrammatic. Illustrating the intravenous variety of sinus thrombosis. (a) Lateral sinus. (b) Jugular vein. (c) Condition originating in smaller veins of mastoid bone. (d) Partial mural clot on jugular vein.

fluid pressure may result if the patient coughs, strains or holds the breath, but this is usually overcome by careful handling and manipulation. Again, there may be an absence of rise or slight rise if the cerebrospinal fluid is under extremely low tension. Obviously, this cannot be the case if following the lumbar puncture the spinal fluid pressure registers over 5 m.m. of mercury. As previously mentioned, in our patient it was 8 m.m. Finally, normal differences and anatomic variations in the size of the lateral sinuses may exist and confuse our findings but the possibility is so rare that it need not be considered.

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1305 Spruce Street.

REPORT OF A CASE OF SIMULATED OTITIS MUCOSUS.

DR. MAXWELL FINEBERG, St. Louis.

Otitis media caused by streptococcus mucosus is receiving more and more recognition from otologists in this country. A few years ago the European literature contained many reports, while American literature very rarely reported streptococcus mucosus infections in the ear. The general opinion as to the reason for this was that the infection was more prevalent in Europe and that the otologists were on guard looking for it. Today, however, American otologists have become cognizant of this type of infection and whether or not it is solely due to this reason, more cases of streptococcus mucosus otitis are being reported in American literature.

The following case is reported to show that despite the fact we are now cognizant of streptococcus mucosus otitis, we must still strike a happy medium in the treatment of suspicious cases:

E. R., age 21 years, female, white. First seen July 27, 1929. She reported that she had sharp, sticking pains in her left ear and felt generally sick. It was elicited in the past history that one month previous, during the course of an acute upper respiratory infection, she had developed a sharp pain in her left ear. She consulted her family physician, who prescribed ear drops. The pain subsided in a few days. The upper respiratory infection cleared up to some extent but she had not been free of "cold symptoms" during the past month. About July 23, she developed a keen, sharp pain in her left ear, the pain now extending to the back of the ear, and she felt that she was running a temperature for one or two days; she did not notice any difficulty in hearing at that time. A postauricular swelling developed about July 26. On examination, July 27, the patient claimed that she was feeling much better and did not look or feel sick, but she was having pain in and behind her left ear. Her temperature at this time was 99.6° Fahrenheit; her throat was negative except for large hypertrophied tonsils; the mucous membrane of the nose was red and swollen; the septum was deviated to the left. The right ear was completely negative. The left ear canal was almost completely occluded by swelling of the superior-posterior wall. Only a thin slit remained, through which the anterior-inferior border of the drumhead was visible. The swelling in the canal was red and angry looking, but there was no discharge. There was a

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very minimum amount of postauricular edema and the postauricular area was tender to the touch. Pressure on the tragus elicited no pain and moving of the auricle was painful, only in that it seemed to move and be related to the tender postauricular area. The audiogram showed normal hearing on the right side and a definite loss in the conductive mechanism of about 20 sensation units throughout, in the left ear. Whisper and conversational voice could only be heard at a distance of about 1 meter in the left ear, while the right ear was normal. The Weber was lateralized to the left; the Rinne was negative on the left side, bone conduction was shortened on the left side and Contra "C" and the low tones were more poorly heard on the left side than on the right.

The question now arose as to whether we were dealing with a streptococcus mucosus mastoiditis alone or an external otitis alone or a combination of both. The history seemed typical of otitis mucosus but no help was gained by smear or culture, because of the contamination of the external otitis. X-rays of both mastoids showed large pneumatic cellular development but there was no evidence of pathology on either side. In view of the fact that the patient said that her cold seemed a little bit worse than it had been during the past month, as evidenced by the swelling of the nasal mucous membrane, and with negative Roentgenograms, it was decided to observe this patient for 24 hours under conservative treatment.

July 28, 1929: Temperature, 99.4°; pain in ear much better but still present on pressure; general condition also much better. It was decided to continue conservative treatment and await developments.

July 29, 1929: Patient complained that she had had a bad night. Temperature, 100.5°. Pain in ear had gradually diminished but she felt generally sick and thought she was going to develop a sore throat. The pharyngeal mucous membranes were slightly reddened.

July 30, 1929: Tonsils red and angry looking; otherwise, condition the same.

July 31, 1929: Patient reported that she had had a chill last night; temperature now 101.5°. The question now arose as to whether we were dealing with a possible sinus thrombosis or was it due to the tonsillitis? As the swelling in the canal wall of the left ear was gradually receding and more of the drum was visible and no bulge was seen in it, although it was slightly thickened and reddened, it was still decided to use conservative treatment despite the definite rigor and chill.

Aug. 1, 1929: Patient felt much better, canal was clearing up and pain now localized to tonsils; the drumhead now beginning to

resume normal appearance; no more pain behind the ear, even on pressure.

The patient made an uneventful recovery with restitution to integrity both in the ear, nose and throat.

The treatment of streptococcus mucosus otitis, according to Neumann¹ and Ruttin², is immediate surgery. Alexander³ urges more conservative measures until definite surgical interference is indicated. Alden⁴ recently reported a series of cases in which he felt he was justified in withholding operation until definite signs of mastoid involvement were evident.

In this reported case there is no question but what surgical interference might have been reasonably excused on the first day the patient was seen. With a typical mucosus history and a greatly sagging posterior wall, many are of the opinion that no more time should be lost; however, on the advice of Dr. Max A. Goldstein, who saw the case with me in consultation on July 28, it was decided not to operate. It was much more difficult in this case to stand by and not operate than it would have been to have explored that mastoid, especially a few days later when the patient reported chills and a rigor; however, as the ear symptoms were receding and there was a definite tonsillitis impending, it was again thought advisable to await developments. We consider that we are extremely fortunate in having been able to sit quiet and allow the patient to effect a normal cure.

It will be readily seen that what factors are to be considered before deciding not to operate. External otitis, the impending tonsillitis and the receding otitis media were all that we had to go on. Should we have decided on surgical intervention, as both Ruttin and Neumann suggest, we should have undoubtedly explored a normal mastoid.

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3858 Westminster Place.

AN EIGHT-MINUTE ROUND TABLE TALK ON BRONCHOSCOPY AND ESOPHAGOSCOPY.*

DR. CHARLES J. IMPERATORI, New York.

Limitations of bronchoesophagoscopy are very few. Technically, there are few instances in which the larynx, trachea, larger bronchi and esophagus may not be thoroughly visualized. Practically many adult patients refuse to permit the examination, either through fear of the instrumentation, having heard through others or having experienced previously inept methods. Inadaptability and noncooperation hinder considerably and make it necessary to resort to general anesthesia.

In order to discuss the limitations of these methods, it is primarily necessary to understand the indications for their employment. The indications may be briefly summarized as follows:

1. In diagnosis and treatment of all diseases of the hypopharynx, larynx, trachea, bronchus, esophagus and stomach.
2. In those diseases, such as abscess of the lung, bronchiectasis and possible asthma, where medicaments may be applied directly to the smaller bronchi.
3. As a means of diagnosis of the cause of hoarseness in infants and young children.
4. As confirmatory in diagnosis of diseases of the esophagus and in the treatment of strictures, whether organic or functional.

Especially is this method of use in confirmation of malignant disease of either the larynx or esophagus, but particularly the latter and without resorting to biopsy.

Gastroscopy is easily accomplished, but the interpretation of the findings is difficult. To quote Schindler†: "Many disease conditions that heretofore have not been clinically diagnosticable can now be recognized and brought under rational treatment. Gastroscopy should always precede an exploratory laparotomy for diagnostic purposes."

From the standpoint of the patient, the limitations of these procedures may be enumerated as follows:

The particular patient under observation; his psychological reaction; his age; his intended co-operation; the part to be examined;

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the anesthesia to be employed; the anatomical or pathological obstacles to be encountered; the time necessary for the examination and the immediate and the remote after-effects, must of necessity all receive careful consideration.

Ordinarily advanced arteriosclerosis, with aortic aneurism and a kyphosis of the cervical vertebra, are the only contraindications that should deter one from doing a peroral endoscopic instrumentation, other conditions permitting.

Foreign bodies in the lung tissue have been successfully removed by Jackson. All foreign bodies that have entered by the *via naturalis* can, except in rare instances, be removed endoscopically, perorally.

It is essential that the bronchoscopists familiarize themselves not only with the instruments but with the anatomical parts to be examined. Continued practice is necessary. The occasional bronchoscopist will always find these methods difficult and not conclusive and, insofar as the patient is concerned, dangerous. In order to differentiate the physiological from the pathological, one must have repeated practice in these methods.

In recapitulation, except in very special cases as above noted, there are no contraindications to bronchoscopy or esophagocopy.

BRONCHOSCOPY, PARTICULARLY IN RELATION TO NONOPAQUE

FOREIGN BODIES.

The nonopaque foreign body is one that gives considerable difficulty in diagnosis, both as to its nature and location. It is always essential that the history of a possible foreign body being inhaled or swallowed be given proper consideration, particularly so should there be symptoms that point to its possible presence. Until its absence can positively be proven by visualization of the food and air passages it should be considered that tentatively, at least, a foreign body is potentially present.

Repeated Roentgenograms taken at various angles, and particularly stereoscopic views, will aid materially in the localization of these types of foreign bodies in the airways. In the esophagus, the location of a foreign body of this type may be materially assisted by the swallowing of a capsule containing barium or by the use of lipiodol. Should the foreign body be located on and above the region of the cricopharynx, it is very possible to misinterpret the findings by the use of lipiodol or similar substances. This is a difficult region to properly X-ray. At least it has been so in my experience. Necessarily, because of mistaken or undiagnosed foreign bodies of this type, and particularly so when located within the bronchi, patients are not treated and frequently the resultant complication is a bron-

chiectasis or lung abscess. Brilliant results in these cases follow bronchoscopy or esophagoscopy.

In the first place, the various complications resulting from a plugged bronchus or from an occluded esophagus are relieved and the patient breathes and swallows almost normally within a short time following the operation of removal of the offending substance, and secondly, the disease which they are supposed to be suffering from is entirely relieved by the mere mechanical removal of the obstruction.

In recapitulation, given a patient with a possible history of having choked or coughed while swallowing some food or any other substance some time previously, and in whom symptoms of either esophageal obstruction has supervened or in whom symptoms of foul and profuse expectoration follow, a bronchoesophagoscopy is most certainly imperative.

FLUOROSCOPIC BRONCHOSCOPY IN RELATION TO FOREIGN BODIES IN TERMINAL BRONCHI.

This very important and vital aid to the bronchoscopist has been highly developed in the bronchopneumology clinic of Dr. Jackson by Dr. Manges. The type of foreign body under consideration usually is represented by the common pin, the head of which is about 2 m.m. in diameter, the shaft about $\frac{1}{2}$ m.m., and the length about 25 m.m. This foreign body is inhaled and gradually sinks deeper and deeper in the smallest ramifications of the bronchi, so that within a short time it is within a peripherally located bronchus, and usually head down. Roentgenograms show the head of the pin located on or near the diaphragm. Bronchoscopy does not show the point of the pin, the reason for this being that even with our smallest bronchoscope, we cannot enter the bronchus in which a pin is lodged. Our Roentgenograms show us about the location of the pin and it becomes necessary to further localize its exact position by fluoroscopy, in both planes; that is, the horizontal and vertical. Using a 5 m.m. bronchoscope, of sufficient length, and a localizing forceps, the patient being in a biplane fluoroscope, the Roentgenographer localizes the anteroposterior plane and directs the bronchoscopist to this region. He then corrects the position by vertical fluoroscopy and directs the bronchoscopist to insert the localizing forceps in the bronchus, where the foreign body is. At best, this is a most difficult procedure, particularly so when the foreign body is located in a posterior branch bronchus. Perfect team work is required. The skill of the bronchoscopist is in inverse proportion to the ability of the Roentgenographer in directing him to the location of the bronchus where the

foreign body is. As a rule, the foreign body is located from 1 to 2 inches beyond the end of the bronchoscope. The bronchoscopist does not see the foreign body and his whole operation is entirely under the guidance of the Roentgenographer. The length of time that the patient is kept in the fluoroscope should be limited, for obvious reasons, and should the first time be unsuccessful, a period of from one to two weeks should elapse between localizations.

In recapitulation, fluoroscopic bronchoscopy is a procedure that requires very close team work.

ESOPHAGOSCOPY.

In my opinion, esophagoscopy always is potentially a serious operation. The greater skill one possesses as an endoscopist will necessarily lessen the possible dangers incident to an esophagoscopy. Greater skill in the removal of foreign bodies in the esophagus is required than in the removal from the bronchi. Improper traction of foreign bodies, improper placement of the esophagoscope in relation to the foreign body, improper instrumentation, may result not only in failure but even the life of the patient may be sacrificed.

Examination of the esophagus and the diagnosing of pathological lesions is of great importance. Frequently Roentgenograms taken of the upper esophagus fail to show lesions that on esophagoscopy are very evident. Before a gastrostomy is done, an esophagoscopy should precede it, and before an esophagoscope is passed, careful study should be made of the Roentgenograms. This study gives knowledge of the size, shape and general direction of the esophagus and gives specifically the location of a lesion located within the lumen of the esophagus.

The esophagus is a most intolerant organ and must be examined with the greatest of care and requires skill on the part of the one examining it.

17 East 38th Street.

†Schindler: *Munchner Mediz. Woch.*, April 14, 1922.

DIAGNOSIS IN UNUSUAL CASES OF SINUS DISEASE.*

DR. E. ROSS FAULKNER, New York.

When reference is made to the question of diagnosis of sinusitis one naturally is inclined to think of old chronic conditions, especially of those cases where a residual focus of infection prevails in a sinus without obvious clinical manifestation. It is generally assumed that acute sinus conditions can be diagnosed by every kind of a physician. This, however, is far from the truth and I am persuaded that many very acute sinus conditions may be totally unsuspected. The exact differentiation between acute coryza and acute sinusitis is not always easy to make. It is quite certain that many mild colds with the usual coryza symptoms do not go on to sinus involvement. These cases often have a sharp reaction in the nasal mucous membrane and with the swelling of the membrane the sinus ostia are closed to the advent of infection. A closing of the Eustachian tube in such cases often seems to shut off the middle ear from the invasion by the infection. Such cases may resolve quickly, with no subsequent involvement of the sinuses, or later on in the second or third week, as the secretion becomes thick and tenacious, blowing efforts may drive the infection into the sinuses or middle ear, and with this comes the accession of pain, more profuse discharge and general toxemia. One may even suspect sometimes that over-indulgence in intranasal treatment may be a factor in producing the invasion of the sinuses.

Another type of case shows with a very acute coryza, extensive involvement of the sinus mucous membranes and more temperature than prevails with the ordinary coryza. The presence of severe headache over frontals or antrum or in the back of the head will be associated with the other phenomena. The patients showing the most severe symptoms, both general and local, will be those with a large, thin-walled sphenoid, with a closed or partially closed ostium. Such cases may almost simulate the onset of a basilar meningitis.

I have mentioned these common types for the purpose of differentiating them from a type less often diagnosed. That is the severe streptococcal sinusitis without coryza symptoms. I am persuaded that a large number of cases diagnosed gripe or influenza are primarily a sinus infection and the most severe ones have no coryza

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symptoms. When the streptococcus invades the nasal cavities and throat, accompanied by other organisms, and especially the micrococcus catarrhalis, I do not believe the damage is nearly so great as when it is the only operating organism. Many of these cases of flu will present themselves in the second or third week, with a purulent discharge or with a locked-in discharge, with no history of an acute coryza during the early stage while the general practitioner was treating them for a general grippe or intestinal grippe. He will probably tell you that they had no nasal infection, but will explain the severe headaches as due to general toxemia. They will usually tell you, however, that they had some sore throat. Convalescence from grippe, as you all know, is apt to be prolonged and many are sent away to hasten convalescence, with an antrum or sphenoid full of pus, accompanied by a severe cough, which rest and fresh air will not cure. When patients say they have not been well since the flu, look out for sinus involvement.

We will now pass on to consider briefly the diagnosis in unusual chronic cases. In the majority of such cases we will be looking for a focus of infection which is producing symptoms in proximal parts, such as the eye or ear, or in remote organs and tissues of the body. History is very important. An attack of influenza or some obscure illness which was never diagnosed. Family history of nose and throat trouble, for these head infections may be a family disease going on from one generation to another as tuberculosis formerly did, and in these cases there may be no history of an acute onset, which probably did occur, but so early in life that it has been forgotten. It seems, however, that an infection may come on insidiously, with no marked acute symptoms, just the same as one may find infected tonsils with no evidence of an acute attack at any age.

Subjective symptoms may or may not be present: An unnoticed postnasal discharge is significant. Headache and its localization should be studied. Thus, headache from a sphenoid may be in the back of the head, in the back of the eyes, in front close to the middle line where the supratrochlear nerve is distributed, or even down the side of the nose in the nasal nerve. Intolerance to draughts of all kinds, colds from wet feet, susceptibility to weather changes, etc., are characteristic of people with a residual head infection.

Clinical Examination: Several examinations with the pharyngoscope. Dusky redness over posterior ethmoids and middle turbinate; edematous tissue under or above the middle turbinate; the presence of a purulent discharge issuing from the sphenoid or ethmoids may be elicited by shrinking up the nose thoroughly and changing the

position of the head. *Antrum Puncture:* The absence of pus in the washing not final verdict on the antrum.

X-rays are of great value but vary greatly in quality and many are worse than useless. They should not be taken during an acute sinus attack as these are deceiving as a record unless taken to compare with subsequent plates. They are never quite reliable in sphenoid diagnosis.

The diagnosis of acute ethmoiditis with rupture into the orbit may oftentimes present some feature leading to confusion. These cases may look for a few days like a cavernous sinus thrombosis, especially if there is no purulent discharge present in the nose. I formerly thought that chemosis of the lower lid was more indicative of sinus thrombosis, but I now know that chemosis of both lids can easily occur from ethmoiditis with orbital complications. In cases where such chemosis is present in the lower lid an X-ray will show ethmoid cells extending well out over the floor of the orbit. The condition of the retinal veins as seen by an ophthalmoscope will help to differentiate the cavernous sinus thrombosis from the ethmoiditis.

The diagnosis of frontal sinusitis is usually easily determined, but I remember a case being sent to me with the diagnosis of an acute frontal and an X-ray which showed disease of frontal on the left side. The reaction in the soft tissue over the left frontal was quite severe, the upper eyelid was very swollen and edematous, closing the eye. He had very heavy, bushy eyebrows and on exploring this forest the small head of a furuncle was discovered. The furuncle went on to rupture and discharge of its core and the patient recovered without the frontal sinus operation.

I realize that in this short time I have very inadequately covered this field, but I merely want to emphasize how difficult it is to arrive at a diagnosis in many cases and the necessity for a most careful study in all cases in order that we may eliminate our errors as far as it is humanly possible.

101 East 58th Street.

DILATATION OF ESOPHAGUS WITH A SPASMODIC STRICTURE.*

DR. GEORGE R. BRIGHTON, New York.

E. L., female, white. *Chief Complaint:* Joint and muscle pains for past nine months. *Family History:* Father died at 68 years, cause not known. Mother died at age of 42 years; sepsis, following ruptured vessel in leg. Two brothers and two sisters well. No family history of tuberculosis, hypertension, cancer, diabetes, heart or renal disease. Brother weighed 205 pounds, about 6 feet; father weighed 195 pounds, about 5 feet, 1 inch.

Personal History: Marital, married 13 years. Husband well. Pregnant only once, eight years ago, terminating in abortion at three months following carrying heavy load. She was curetted after abortion, in bed two weeks, good recovery. Born in Bohemia. Has been in U.S.A. since 1903, residing in New York City. Occupation: Housewife, lives in five rooms. Has help with rough work. Habits: Always in the habit of eating regularly. Sleeps eight hours a night. Exercises moderately, mostly walking. Tea 0-1, coffee 2-3, alcohol 0, drugs and medicine 0. Weight: Present weight is 108½ pounds. At onset of present illness weighed 135 pounds. Best weight, 160 pounds at 16 years.

Previous health and illness: General health always good. Acute infections: Disease: No history of typhoid, pneumonia, pleurisy, acute rheumatic fever, chorea, diphtheria, scarlet fever or malaria. Operations: Injuries: Appendectomy, 1913, at Lenox Hill Hospital. Ovarectomy, 1925, at Mt. Sinai Hospital for growth: Head: Headaches not frequent. Eyes: No vision defects, no diplopia or inflammation. Nose: Has few colds, no epistaxis, no obstruction. Ears: Furuncles in both ears in 1925, no earaches, no tinnitus, no discharge. Teeth: Few tooth aches, some bleeding gums and recession. Most of lower and all of upper teeth removed in past six or seven years. Before extraction had many capped teeth. Throat: No sore throats, no tonsillitis, no hoarseness. Resp.: No chronic cough, no pain or respiration, no night sweats, no hemophysis. Cardiac: No precordial pain or distress, no edema, cyanosis, dyspnea. arthapnea, nor palpitations.

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Gastrointestinal: Appetite is good. Not constipated. She has always had a normal bowel movement once a day without catharsis. In 1914, she had epigastric distress after eating. Went to Lenox Hill Hospital, where X-rays were taken and she was said to have a dilated esophagus. A stomach tube was inserted, through which she was fed for a number of weeks. Up to present time has had this post-prandial oppression at times, which she relieves by emesis or some water. There was an exacerbation of symptoms in 1927, after an emotional upset. No history of hematemesis diarrhea, abnormal stools, nor jaundice.

Genitourinary: Nocturia 0-1, depending on fluid ingestion, no dysurea, polyurea, oliguria nor hematuria. Denies venereal infection. Menses: Onset at 14 years, always regular, 28x2-2 pads used. Some irregularity for a while after ovariectomy. Last period, May 12, 1928, no leucorrhea. Neuromuscular: No nervousness, insomnia, tremor vertigo, convulsions, paralysis nor paresthesia. Memory is good, and disposition is cheerful.

Present Illness: Patient was apparently in good health until about nine months ago, at which time she suddenly felt malaise, had a chill (not shaking) and ran a temperature of 101-102° continuously. She denies having any respiratory disease at that time. She noticed, however, a feeling of pressure over the sternum and some soreness of the thighs, which was relieved by rubbing. A physician was called in and claimed she was suffering from a cold, advising her to stay in bed. She did this, but her pains continued being of a migratory nature and her fever continued. Not satisfied with her progress, she changed physicians at this time and the new doctor, after three weeks, on the strength of the signs and symptoms and through red spots of an undetermined nature seen over the bend of the right elbow, diagnosed rheumatic fever. He put her on salicylate per rectum three times a day.

On one occasion, after salicylates were begun, she had some swelling over the wrists and legs, which cleared up in two or three days. At about the same time, crops of small pustules were noted on the extremities. These were on an erythematous base. They disappeared usually by a process of drying and crusting. They have persisted up to the present time. Towards the end of the second month of her illness, June, 1928, while all the mentioned symptoms persisted, she vomited a glass or two of light red material, which she says was blood; no clots were seen in this. Later that same night she had another emesis of a similar nature. For a week previous to the attack she noted dark stools, but they were not black.

rather a dark green. This incident left her very weak and with a marked secondary anemia (Hgb., 46 per cent). She was put back to bed and put on a daily lavage, then on q.d. lavage. Has continued to a few weeks ago. She claims that the tube has irritated her so that as a consequence she has developed a dry, hacking cough, unproductive in nature, and aggravated by lying flat. Though she seemed to be recovering well from the hematemesis, progress was not rapid enough and so three weeks later she was given two blood transfusions of 400 c.c. each. She kept on running a fever and had the same muscular pains. All this while she was on salicylate. She was, after a while, allowed out of doors during the day. In September, she ran a temperature of 102-103° and was put back to bed. Another transfusion was given at this time. After two months with little improvement, she was once again allowed out of bed.

About six weeks ago, the migratory pains settled in the joints of the extremities. There was slight heat in them and some swelling. Stiffness was noted mostly on arising in the morning and when standing up after being seated. She had regained very little of her strength, although she had gained back about eight pounds of the 30 which had been lost. She again sought advice of another doctor, who advised her to come into the hospital.

The general physical examination was essentially negative, except for the examination of the thorax. Thorax: Somewhat barrel-shaped but not abnormally so. Symmetrical, motile, no abnormal pulsations, no distended veins. Breasts: Multipara type, fair size, no masses, no tenderness. Lungs: Inspection, quiet, easy, regular respiration, no cough, motion symmetrical. Palpation: Right side, fremitus; slightly greater than left. Percussion: Posteriorly both apices are diminished in resonance, but the right much more so than left. Anteriorly, left apex is hyper-resonant; the right is quite dull; the right axilla is hyper-resonant. Auscultation: Breath sounds are clear, whispered voice conducted normally, no adventitious sound. Heart: Inspection, apex impulse faintly visible $9\frac{1}{2}$ c.m. M.C.L. on abnormal movements of precardia: Palpation: Apex impulse felt $9\frac{1}{2}$ c.m. M.C.L. regular, no thrills, no shocks, no precardiac left, no abnormal pulsations. Percussion: M.C.L., $8\frac{1}{2}$ c.m. A.M. D. 2 c.m. R.M.D. 2 c.m. L.M.D. 10 c.m. Auscultation: Sounds strong, regular, no murmurs, no rub. Pulse: Regular, strong, full. Vessel walls soft, not tortuous, both radials and temporals equal. Blood Pressure: 114/78.

Fluoroscopic examination of the chest showed the lung fillers to be clear. The right lung was found to be partially obscured by a large,

dense shadow projecting outward and backward to the posterior chest wall. It seemed to be in contact with the posterior chest wall. After drinking a glass of barium, this shadow was found to be an enormously dilated esophagus. There was also a six-hour residue of food and barium in the lower portion of the esophagus. This lower portion was tortuous and made two wide curves before reaching the cardiac orifice. As far as can be determined the lower end appeared smooth and showed no evidence of infiltration in the walls. After the ingestion of another glass of barium the esophagus was completely filled and found to be pushing outward into the medial half of the right lung. The esophagus, at the level of the sternoclavicular joint, measures 12 c.m.; on the lower third it measures 15 c.m. The walls appeared smooth and nothing definite could be seen to suggest a diverticulum. There was a residue of barium near the outer margin of the upper third, and it was difficult to account for the presence of the barium shadow held at this level. The cardia of the stomach as far as could be determined appeared smooth, and nothing was seen to suggest malignancy. There seemed to be a hiatal spasm, with marked dilatation.

Esophagoscopy: We found the esophagus immensely dilated and full of food remains. Found an opening through the diaphragm into the stomach that appeared to be closed by spasm. No organic lesion of mucous membrane could be detected in that region, except for inflammation of mucous membrane that would be expected.

468 Riverside Drive.

LOCAL VERSUS GENERAL ANESTHESIA IN TONSILLECTOMY.*

DR. HARMON SMITH, New York.

Technique: First, ascertain patient's susceptibility, if possible, to morphin and novocain. Second, examine heart and determine coagulation time of blood. Third, one-half hour before operation begins administer hypodermically $\frac{1}{4}$ gr. morphin, 1/100 or 1/200 gr. of scopolamin, according to size and age of patient, dissolved in a piquer of coagulin. Fourth, the patient is placed upon the operating table in a semirecumbent position—a smear is made over the anterior and posterior walls of the tonsil where the injections are to be made, of a small quantity of cocain flakes, which is applied with a cotton-wound applicator dipped in the novocain solution and then in the cocain flakes. I find that in this manner less disturbance arises from cocain than when a solution is employed. Fifth, prepare 1 oz. of a 1 per cent solution of novocain, to which has been added 10 drops of adrenalin. This is injected at both the upper and lower pole of the tonsil anteriorly and posteriorly into the capsule and not into the tonsil itself. Sixth, after an interim of from five to eight minutes, test the surface of the pillars to determine if anesthesia is complete and, if so, partially liberate the anterior folds with the Leland sicle knives—beginning on the right tonsil first and confining all attention to this side until its removal is complete. Then with tenaculum forceps draw the tonsil downwards and outwards and continue the separation of the anterior fold from the tonsil with curved, sharp-pointed scissors or some of the numerous separators. Then liberate the posterior pillar. When properly separated the tonsil can be brought well forward from its capsule. Then engage snare and remove. Whether there is bleeding or not, immediately insert a fairly large gauze plug in the tonsillar fossa, which is covered with either Monsell paste or with a tannic and gallic acid paste. Both of these are astringents made up in vaseline. Then turn to the left tonsil and proceed in a similar manner.

Hemorrhage at this time, if any, is controlled according to its severity in the same manner as it would be in any case under general anesthesia. It would be ridiculous to assert that under local anesthesia one never encounters hemorrhage and it would be equally ridiculous for me to describe to this body the methods employed to control the same.

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Advantages from the Operator's Standpoint: The patient, unless morphin has produced nausea, is as quiescent as under general anesthesia. Observation of the operative field is less obstructed by tongue, anesthesia apparatus or secretions. Dissection is far easier, as the position of the patient and his co-ordination subserves to expedite the surgical procedure. Bleeding—the most undesirable factor in the removal of tonsils in the adult—is largely diminished, and often I have removed tonsils under local where the bleeding would not wet more than one piece of gauze. Subsequent pain is no more, no less. Reaction no more nor less. Vomiting and the distress incident to ether is not present. Ether eyes, pneumonia, lung abscess, bronchitis and general physical disturbance incident to ether are all absent.

Hemorrhage is as easily controlled under local as under general at the time of operation, and secondary hemorrhage or postoperative hemorrhage is as easy of control, or as difficult, following one as the other. If there is a tendency to oozing, leave the plugs in overnight, and I'm told by house surgeons who take care of the postoperative tonsillectomies that there are fewer cases of hemorrhage from the local than from general anesthetics.

End Results: In the number of years that I have been pursuing both methods I have come to the conclusion that the results in my cases of local anesthesia are far better than the results in which a general was employed. Those who prefer the general may carp that I possibly didn't know how to remove tonsils in the first place under general anesthesia. This may be so. However, I happen to be one who was first initiated into the realm of *tonsillotomy*, but was of the first to promote and extend the process of *tonsillectomy*. It is easy for some of the younger men to embrace the act of tonsillectomy, particularly as it has been worked out and substantiated by some of us older operators, who ventured into the field when it was sorely condemned by our seniors, who then sponsored *tonsillotomy*.

I am perfectly aware of the timidity of some patients regarding local anesthesia and who disclaim any apprehension regarding the operation, provided they are not conscious of the operation and of the instrumentation incident thereto; but I've found that those who protest the most and are apparently the most nervous and whose throats are the most irritable and ultimately submit to local anesthesia are the ones who face the ordeal best and are the most submissive at the time of operation. I'm also aware of the fact that some patients feel that tonsillectomy under local anesthesia is but a minor procedure and resent the charges made for what they consider

a mere "gesture" at an operation. There may be some operators who yield to this psychology and permit their patients to feel that the ether-unconsciousness, operative habiliments, special anesthetics, etc., are essential factors in the removal of tonsils and thereby easily enhance their incomes. Of course when patients are cognizant of the fact that it only takes about 15 minutes from the time they appear in the operation room until they retire therefrom with their tonsils removed under local anesthesia they are naturally unresponsive to the charges that some make for this small amount of time employed in their behalf. These questions of adequate compensation and satisfaction of the patient should in no manner enter into the merits or demerits of local anesthesia. One's training and habit of operation is likely to circumscribe their vision and their adaptability to other methods; but until other methods are tried with an open mind—to adopt them or discard them accordingly, one should not condemn something out of the ordinary or personally untried until fairly experimented.

Personally, I can't see any reason for taking one-half to three-quarters of an hour to remove tonsils, either under local or general anesthesia and I'm sure that the longer the patient is under general anesthesia the more dangers are likely to ensue. A similar time under local anesthesia presents far less complications.

150 E. 62nd Street.

RECURRENT TRACHEAL STRICTURE.*

DR. J. D. KERNAN, New York.

This patient, a woman, age 34 years, was admitted to the Presbyterian Hospital, Jan. 31, 1916, being then 20 years old. She gave the following history:

Four years earlier she had had a tracheotomy done for hoarseness and dyspnea, which had been progressive for two months. The tube at that time had been left in a week, and after its withdrawal she had been well for four years.

Examination at the time of her admission to the hospital showed a web in the larynx below the vocal cords, narrowing the lumen to such a degree as to call for a tracheotomy. A specimen taken showed

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chronic inflammation of the tissue, as did another specimen taken from an ulcerated area in her nose. After the tracheotomy, the narrowing of the larynx disappeared and she was discharged well, without the tube, on Feb. 12, 1916.

Her next admission was March 13, 1923. She had been married in the interval, and had five children, all living and well. She had been complaining of hoarseness for two years, and increasing dyspnea for two months. Bronchoscopy was done on March 21, and showed a narrowing of the trachea, extending from just below the vocal cords almost to the bifurcation. Bronchoscopy was repeated on March 25 and 31 and April 4. The narrowing had largely disappeared when she was discharged from the hospital. Examination of the tissue showed chronic inflammation.

She was again admitted to the hospital on Oct. 16, 1928. She had been well to within 10 days of her admission, at which time she had caught cold, and when admitted was acutely ill with pneumonia. Examination of the larynx showed a narrowing below the vocal cords in the same position as at the previous admissions. It was so extreme as to require a tracheotomy. The tracheotomy did not entirely relieve her dyspnea and it was found that the obstruction extended beyond the tube. The narrowing was dilated with bougies and at the time of her discharge from the hospital she seemed completely well.

A bronchoscopy done Feb. 14, 1929, showed a normal larynx and trachea.

To sum up, we have here an otherwise healthy woman, who in the last fourteen years has required three tracheotomies to overcome a progressive lesion in the larynx and trachea, associated with an atrophic rhinitis and pharyngitis. Examination of the diseased area has never shown anything but chronic inflammation. The lesion has been progressive, appearing at first only in a limited area below the vocal cords, and at the last attack extending almost to the bifurcation of the trachea.

Bronchoscopy with dilatation appears to cause a temporary destruction of pathological tissue, which later reappears.

120 East 75th Street.

SOME OF THE USES OF DIATHERMY IN THE TREATMENT OF EAR, NOSE AND THROAT.*

DR. LEE M. HURD, New York.

The term endothermy covers the use of the three high frequency currents. The first, the so-called knife current, divides the tissues by muscular disintegration, which merely sears the tissue for a slight fraction of a millimeter. This is a bipolar current. Second, the coagulation current, also bipolar (d'Alsonval), which destroys the tissue in proportion to the amount of current used, from slight desiccation to deep coagulation. Third, the Oudin current, monopolar, is more superficial and desiccates. The two latter, however, may overlap, in that a very weak coagulation current will desiccate, and a very strong Oudin will coagulate.

The procedures are performed with ordinary sewing needles with a standard handle, and specially-shaped instruments to reach the deeper parts of the nose and throat.

I have found little use for the knife, as the liability of hemorrhage is but slightly less than when snare, scissors or ordinary knife is used in the nose and throat.

I have used the endotherm knife to better advantage than the older methods in opening furuncles, where the incision is sealed against infection and is bloodless. In opening cysts, I use the knife first to make a small circular incision, through which I destroy the cyst wall with the desiccating current.

The removal of tonsils by the knife current, in the few cases I have tried, has not shown any improvement over the older methods, but we hope, in the near future, to perfect an instrument for bloodless removal of tonsils, that will have all the advantages of the older methods, with none of the disadvantages.

The coagulation current is an improvement over the standard technique in: 1. Destroying postoperative granulations in the nose and throat; 2. in reducing hypertrophied turbinates; 3. in dividing synechias in the nose. There was a great tendency to recurrence with the older methods, but with coagulation this is overcome, because the coagulated area remains between the two bases while they heal; 4. in cases of epistaxis from the nasal septum, the monopolar current (Oudin) will close the vessels with more precision than either the electrocautery or chemical caustics.

In fact, hemorrhage anywhere in the nose or throat, except from

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a fair-sized artery, if it can be reached, can be easily and quickly sealed with either the coagulating or desiccating current.

In treatment of the nasopharynx, the coagulating current has distinct advantages, especially in the fossa of Rosenmueller, and about the Eustachian tubes. Where the lymphoid tissue about the mouth of the Eustachian tube is a series of follicles, each one can be pierced with the needle and destroyed. Sometimes these lymphoid follicles are found even in the mouth of the tubes. The old method of biting these out tended to cause more adhesions. This condition and its treatment is very important, because middle ear infections and catarrh are often due to this cause alone.

Adenoidal remnants left after operation, especially toward the sides of the nasopharynx, can be more accurately removed by coagulation. The lateral pharyngeal folds and lymphoid follicles in the postpharyngeal wall are also more satisfactorily eradicated by coagulation.

Postoperative remnants of tonsils, and the best of operators will occasionally find a small lymphoid area after operation, more frequently after the indifferent operation, have been shown by several recent authors to be more prone to cause cardiac and joint infections than the preoperated tonsil.

These remnants can be destroyed with coagulation, usually all at one sitting, without much after-discomfort. Whereas, if they were removed by the older methods, the throat would be as sore as from the tonsil operation itself, plus the liability of hemorrhage.

The lingual tonsil, and lingual varicose veins, can be destroyed with coagulation with less pain and no hemorrhage.

I have only mentioned conditions in which I have used this method long enough to personally observe its advantages. I wished to perfect the method on simpler conditions before using it on malignant growths in the sinuses, on the tongue, or benign laryngeal growths.

Technique: The area on which this method is to be used should be anesthetized, because it is too painful otherwise, preferably with novocain injection. If the area to be cleaned up is extensive, such as in a poor tonsil and adenoid result in the nasopharynx and pharynx, a general anesthetic is necessary. At present we use chloroform, until a safe methods with ether can be worked out.

Diathermic Heat: In cases of pain and tenderness from acute frontal and maxillary sinusitis and ear infections, a small metal plate is fitted over the painful area of the forehead or cheek, with the indifferent electrode on the arm or back. This will regularly relieve the pain, and is the only method I have found that will do it so promptly.

39 East 50th Street.

International Digest of Current Otolaryngology.

Editor:

DR. MAXWELL FINEBERG, St. Louis.

Collaborators:

Mr. W. S. Daggett, London.

Priv. Doz. Dr. G. Keleman, Budapest.

Dr. H. C. Rosenberger, Cleveland.

Dr. D. E. Staunton Wishart, Toronto.

St. Louis Jewish Hospital E.N.T. Journal Club.

Castex, in the *Revue de Laryngologie*, etc., 50, 226-244, 1929, writes on the use of electro-coagulation by diathermy as the operation of choice for endo-nasal procedures. The big advantage is the bloodless operation and the one disadvantage is the lengthened healing time. The author recommends the method for resection of turbinates, for the removal of spines and crests of the septum, for the destruction of polypoid rests after the classical removal, for the removal of benign tumors, for the handling of nose-bleeds and for the wide opening of the maxillary antrum from the floor of the nose. The apparatus and technique are briefly described. M. F.

Voel, in the *Archives of International Laryngology*, etc., 8, 102-104, 1929, describes a case of acute purulent otitis media without change of the drum membrane.

The case was that of a 45-year-old woman with complaint of constant headache, accompanied by unbearable ear pains. She had an acute upper respiratory infection at that time; drum membranes normal. The diagnosis made was neuralgia. Despite the negative findings a paracentesis was done, which disclosed a bloody mucopurulent secretion. The pain immediately disappeared; the discharge stopped in 24 hours.

The author mentions two other cases with similar histories and symptoms, which later were operated upon and pus found in the mastoid cells. M. F.

Troland, of Boston, in the January, 1929, issue of *The Journal of General Psychology*, presents a very interesting article on Psychology of Auditory Qualities and Attributes. The notion of the mechanics of the inner ear which was first suggested by Roaf, and which has been developed by members of the staff of the Bell Telephone Laboratories, may be accepted as generally satisfactory. However, the

neurological bases of the attributes of auditory experience require further elucidation. Different acoustic frequencies are actually assigned to separate nerve fibre groups, as contemplated by Helmholtz, but pitch is nevertheless determined by the nerve impulse frequency and not by the anatomical identity of the fibres. Difficulties due to limitation by refractory phase are removed by partitioning the conduction of the total frequency among the co-operating fibres, when the frequency is excessively high. Loudness depends upon the total number of impulses passing a fixed cross-section, per second, in a group of co-operating fibres, while volume is related to the mere number of such fibres. Localization rests primarily upon the time difference in the brain between corresponding sets of impulses from the respective ears. Auditory brightness is due to the sharpness of the impulse "wave-front" within the fibre group. The departure of the auditory experience from the purely tonal or musical type is due to the production of irregularity in the timing of the nerve impulses, in consequence of effective overlapping of the action of different frequencies on the basilar membrane. The total unanalyzed auditory quality is determined by a complicated pattern, or Gestalt, involving both the spatial and temporal distributions of neural currents, which vary in frequency and also in degree of rhythmicity.

M. F.

May, Thoburn and Rosenberger, of Cleveland, in the Aug. 24, 1929, issue of the Journal, American Medical Association, report on a Roentgenologic Study of Aspiration During Tonsillectomy. They took a series of 25 cases and investigated, by means of radium, opaque substances and the X-ray, how a secretion is seen in the bronchial tree during and after tonsil operation. They claim that the extreme Trendelenburg position during operation minimizes aspiration and that the constant and thorough removal of pharyngeal secretion also plays some part. When aspiration occurs, most or all of the aspirated material is eliminated during the first six-hour interval following operation. By their method of examination, they demonstrated in several cases that aspirated material may appear in the lung during the operation, but may have been entirely eliminated by the end of the operation.

M. F.

Todd and Fowler, in the *American Journal of Anatomy*, Vol. 40, No. 2, November, 1927, reported the results of their anatomical investigations relative to the muscular structures forming the bed of the palatine tonsil. They contend and claim to have demonstrated that the superior constrictor has no direct connection with the

tonsil, as is commonly taught. They assert that the muscular fibres commonly found attached to the equator of the tonsil are certain fibres of *m. pharyngopalatinus* which fibres hitherto were erroneously supposed to originate in the superior constrictor muscle. H. C. R.

A CONSERVATIVE MASTOID OPERATION. Mr. Mollison, at the Otolological Section, Royal Society of Medicine (1-11-29), showed three cases of successful conservative mastoid operation. His technique was that of Schwartze; in addition he removed the outer attic wall and the incus: he filled the cavity with a temporal muscle graft.

Otorrhea had been present from two to eight years and all predisposing causes removed, all forms of conservative treatment had been tried.

Mr. Jenkins said he had done a similar operation since 1914, many of his cases had given brilliant results and a few had been disappointing. He used a musculoperiosteal flap with base forwards, which contained a few sternomastoid fibres. The speaker laid great stress on selection of cases. The operation was to be considered for those patients whose hearing was good and in whom there was no gross destruction; there should be proof of a diseased incus. In successful cases the drum healed, in others the ear became dry but the perforation persisted.

W. I. D.

The Italian Society of Otolaryngology held its annual meeting in Milan Sept. 26-28, 1929. The main portion of the program was an intensive study of esophagus spasm. The two chief participants were Alagna, of Palermo, and Bruzzi, of Naples. Their contributions comprise a precessional volume of 137 pages. Alagna discussed the historical aspect from Hippocrates to Roentgen; Bruzzi presented the anatomical and physiological foundations for our knowledge of spasm of the esophagus. He reported that physiological swallowing is the prime factor in studying pathological spasm. Bruzzi divides the pathology of spasm into acute, primary and secondary, starting with the inflammations and ending with the tumors. Alagna presented the symptomatology of primary spasm, and Bruzzi presented the symptomatology in secondary spasm. Following their discussion of the differential diagnosis, they considered the treatment and prognosis. Alagna concluded with complications of esophagus spasm in which he included esophagus diverticula, megaesophagus, cardiospasm and changes in terminal periods of diseases with dysphagia.

Citelli, of Catania, presided over the congress. There were sixteen addresses on the esophagus, out of a total of 114 addresses in all.

Other interesting theoretical and experimental reports were presented. Cagliari, Sardenia, was chosen for next year's congress. G. K.

There was recently established The International Society of Latin Otolaryngologists. The charter members are Professors Bilancioni, Gruneti, Calamida, Caliceti, Citelli and Milan. The society will meet every year and will discuss only general scientific topics; individual communications will not be accepted. The first congress is to be held at Madrid with papers on Septicemia of Otic Origin and Sinus Phlebitis. The subject of the Mechanism and Reactions of Labyrinthine Stimulation will come up for general discussion. M. F.

Alessandri and Visani, in The Revista de Clinica Medica, Florence, May 15, 1929, present an article on Suppurative Gangrenous Lesions of the Lung in Relation to Tonsillar Infections. Their reasons for assuming this relationship are: 1. Coincidence with tonsillar infection; 2. coincidence of micro-organisms; 3. the marked improvement after elimination of the original focus. They claim that fusiform bacilli and especially spirochetes are the actual agents of the disease and not secondary invaders. For this reason, they explain, arsenic is of such marked value in cases of pulmonary gangrene. M. F.

The Southern Section of the American Laryngological, Rhinological and Otolological Society will meet in Roanoke, Va., Jan. 18, 1930. The guests will be Dr. Ross H. Skillern and Dr. Fielding C. Lewis, of Philadelphia. The chairman for this year is Dr. E. G. Gill, of Roanoke.

THE RADICAL MASTOID OPERATION (A Review). J. E. Stewart and J. S. Fraser. The chief interest in this paper was a comparison between grafted and ungrafted cases. Conclusions were drawn from a series of over 400 cases from the Royal Infirmary, Edinburgh. The following points were noted: 1. The after-dressings of grafted cases were much less painful. 2. Epithelialization was quicker and stay in hospital shorter in grafted cases. 3. There was little difference in the percentage of cases which completely epithelialized (non-graft, 37 per cent; graft, 34 per cent). 4. In grafted cases, 12 per cent had worse hearing as against 25 per cent in non-grafted cases. Improved hearing after operation was much the same with either technique. W. I. D.

THE NEW YORK ACADEMY OF MEDICINE.

SECTION OF LARYNGOLOGY AND RHINOLOGY.

April 24, 1929.

DR. DAVID H. JONES: Gentlemen, our honored guest, Dr. Emil Mayer, has brought with him two mementos which I will pass around; one, the programme of this Section for November, 1902, when Dr. Mayer presided and when he read the memorial to Dr. Morris J. Asch, published later in *THE LARYNGOSCOPE*; the other is an unique letter in the handwriting of Dr. George M. Lefferts. It reads, "Confidential. New York, April 21, 1899. My dear Dr. Mayer: How would you regard a proposition to become co-editor with me, for America, in the *Centralblatt fuer Laryngologie, Rhinologie und Verwandte Wissenschaften*—Sir Felix Semon—favorably or unfavorably? Details later if necessary. Yours faithfully, Geo. M. Lefferts."

In addition, each member present was asked to sign his name in ink on slips for Dr. Mayer's collection of signatures of American and foreign laryngologists and otologists.

And now, gentlemen, I introduce to you our honored guest.

The Secretary read a letter from Dr. Coffin, explaining why it had been found impossible for him to be present.

DR. EMIL MAYER: I am not a Manhattan man, as you may know, which reminds me of an experience I had when I attended one of the meetings of the American Medical Association in St. Paul some years ago. They asked a number of us to send our pictures for the St. Paul Academy of Ophthalmology and Otolaryngology and we sent them, innocently enough; and when we got there we found that someone of them had made caricatures of our pictures. I remember Percy Fridenburg being spoken of as "Romeo", and I myself was King Edward—a scroll reading: "O look here! I declare! Is this Edward the Seventh or Emil Mayer?" At that meeting we had the same condition as here tonight—a Scotchman on one side, a Welshman on the other, each arguing what the other could do; and Robert Levy got up and said: "I am neither Scotch nor Welsh."

I can say that my memory goes back even further than Coffin, back to 1879. Later, Coffin and I were working simultaneously, without either of us knowing what the other was doing, on empyema in infants. I got the credit for it, but I want to say that it belongs just as much to Coffin as to me! That is the only spirit in which men can work. It is remarkable that two men without any knowledge of what the other is doing should bring out the same thing, and yet one may be accused of plagiarism. Before that happens again to you, I ask you to investigate always what a man is doing and take his word for it, sometimes.

Mr. Chairman and Friends All: It has been many years, nearly five, since I have been able to address you. There was one exception, however, and that was last year when Dr. Nielsen presided and Dr. Mosher was our guest. Those were years of excruciating pain for me. That last visit of mine to you, just mentioned, seems as though it were a century ago. I have only the recollection of having been here and addressing you, and telling how I felt—that I was the first to launch Dr. Mosher into American laryngology, as a visitor, for he was my guest in 1902 when I presided here, and it was his first appearance as a laryngologist, outside the sacred precincts of Harvard. I was wracked by pain and full of all imaginable drugs, from digitalis to euphyllin and theobromin. Well, by God's mercy, my pains have left—and now four months have elapsed and I have not had a pain.

During all those years my thoughts were constantly of you, and especially of the examining board. I pestered my friends, in the board and out, with letters. I was to reform the world, and especially otolaryngology. What must they have thought of me? I wrote to Dr. Arthur Nilsen, then your chairman,

approving of the preessional dinners, and said I felt that within one year closer comradeship would be obtained than formerly in five. I recall how long it took for me to know Dr. Lederman, Dr. Jonathan Wright, Dr. Thomas J. Harris, Dr. Forbes, Dr. Hays and hosts of others.

Dr. Harris spoke of my letter to Dr. Nilsen, which was read, and he presented a resolution that the Secretary should—and did—send, conveying the thanks of each member of the Section to me, and expressed the sincere hope that I might fully recover and be with you again.

Well, gentlemen, here I am, as Dr. Harris so kindly predicted.

I have always been a lover of Dickens, and I recall the poor boy, Joe, in "Bleak House", who was so devoted to Lady Deadlock, and that he said: "She was werry good to me, she woz." You have been "werry" good to me, and I assure you that I am grateful. I must particularly thank Dr. Frank Miller, who wrote over his signature, "Dr. Mayer, God bless him—we all love him." I can only say to you, and through you to the great body of American otolaryngologists: "You have honored me more than I fear I have deserved, for no greater honor can ever come to man; to be president of every gathering of his fellow specialists, and greatest of all to be the only American, as an honorary member of the American Laryngological and Otological Society." I stand aghast and wonder if it is really me—for, after all, the greatest prize that a physician can secure is the esteem of his fellow craftsmen, not the easily procurable flattery of the credulous public. This is what Morris Fishbein, editor of the *Journal of the A. M. A.*, said.

I can only add my sense of deep appreciation for all you have done for me and mine, for "such deeds sweeten one's notion of human conduct; they give one not so much a feeling of gratitude as a renewed sense of human dignity, and I warmly place them on record."

Reverting once more to my boyhood's favorite, Dickens, I will say with Tiny Tim, "God bless us all".

I once had the hardihood to preach on the method of preparation of a medical article, and the *Evening Sun*, of June 15, 1915, took me thus to task:

A PRESCRIPTION FOR DOCTORS.

Specialists in every field might well heed the plea of Dr. Emil Mayer in the June *Medical Record* for higher standards in technical writing. These authors have too easy a time of it. Read this, ye striving, oft-rejected contributors to popular periodicals:

"Unfortunately we have such a large number of medical journals eager for matter to fill space that a rejection by one is followed by its prompt acceptance by another and its publication. Rejections, as we know, are very rare." Let all rejected authors study medicine forthwith. Literary doctors have always been successful, from Sir Thomas Brown to Holmes, Weir Mitchell, Conan Doyle and Woods Hutchinson. What they profess in print they practice in office hours, and practice and profession are mutually profitable.

But we are more concerned with Dr. Mayer's general thesis to the effect that good form in expression is not beneath anybody no matter how much he may know about his particular subject. He advises young physicians to practice writing while they are waiting for patients. Young lawyers like Anthony Hope have done so while they waited for clients. We would specially commend to them a study of the shorter words in the dictionary. Latin is not the only language, if the Romans were great law-givers. A little attention to the exact meaning of words will do no harm. For example, many physicians, in speech as well as in writing, use "case" and "patient" interchangeably. As Dr. Mayer explains, "case" is an instance of disease, the patient being the person affected. The case ends in recovery—let us hope; the patient lives happily till the next war.

A common practice is the sending of a paper read in convention without change to a magazine. Unless the editor is wise enough to cut out the conventional phrases, typesetter and reader must waste time and attention on sentences and paragraphs that had only a temporary interest—if they ever had that. Here is more good doctrine:

"Quotations in Latin are often incorrect and sound pedantic. Reading the works of the best authors in general literature results in a better command of

language, enables you to have a style of your own and broadens the scope of your knowledge of men and things."

Finally, brethren, saith the preacher, arrive at some definite conclusion. Then conclude.

Quite recently, in *The Medical Week*, edited by our associate, Samuel J. Kopetzky, I find this:

THE DOCTOR'S BETTER ENGLISH.

Editor, Public Forum:

That was a nice editorial on precision of diction and a coherent, logical style. But why blame the poor doctor? True, he has failed to read the pamphlets that used to be, and I hope still are, on the tables of the library in the New York Academy of Medicine.

I was even guilty of writing one myself. I have even lectured on the subject. Now, having long since passed the Biblical age and reached that of garrulity, I watch amusedly at what my good friends, for I love them all, are doing.

"To come to our muttens," as the French say. The aforesaid doctor is not to blame!

Where is the editor? What is he paid for?

You try to write for Mr. Mencken and his ilk; will they let it go uncorrected? Not much!

You say the editor is not paid. Well, whose fault is that?

It is our fault. I am sure that I couldn't find your salary with the most powerful binocular microscope ever made. I'll even wager that it has cost you and yours a tidy sum.

The answer is simple: We have been, are, and I fear always will be chumps, until some doughty champion arises and wakes us up.

I'd love to be that champion and, honestly, I would try it on and wager that I would succeed.

I'd take you, Mr. Editor, the president of the county society, its doughty director, hallowed be his name, and the president of the New York Academy, even, too, my good and worthy friend Fishbein, and we would appear before the Carnegie Fund and state our case.

We would say that there is no greater teacher than an honorably and decently conducted medical journal; I include *The Medical Week*.

They are eager to help American teachers and do so for colleges. Well, what's the matter with our journals? You know the answer.

"Well," says he, "how much do you want?" I answer, the world is my limit.

I want to pay every editor, hold him to his job and have full time work.

The rest of what I would do is, as Kipling says, another story.

At 75, I don't think you will refuse me space. I append my card, and sign myself.

Very cordially, ABERNONSEFF GEORGE.

New York City, March 5, 1929.

These two articles cover the subject better, I think, than volumes could.

And so gentlemen, the hour waxes late. This is Manhattan night—your patients await you.

I can only say that I am glad to be with you again. God bless you all, once more, and may you prosper.

Diagnosis in Unusual Cases of Sinus Disease. Dr. E. Ross Faulkner.

(Appears in full in this issue.)

M., age 64 years, Sept. 15, 1926. Hoarseness three months, no pain, dysphagia, expectoration or dyspnea. Indirect examination reveals mass, irregular in outline, anterior one-third of right cord, size of head of medium size hatpin, cords freely movable, no edema of arytenoids.

Biopsy, Sept. 15: Papilloma showing squamous cell epitheliomatous degeneration.

Sept. 24: Thyrotomy and examination of specimen shows squamous cell epithelioma right cord and a polypoid mass from left cord.

Nov. 1: Perichondritis right, involving cartilage inside and outside larynx; where cord was removed small abscess developed and was incised under direct.

Nov. 5: Mass removed from area of right cord found to be granulation tissue. Nov. 26: Radium pack to right side of neck 4-30 mg. brass tubes

for nine hours. Nov. 27: Specimen removed from area shows granulation tissue. Jan. 6, 1927: 200 m.gm. pack radium 3,200 mg. hours. Feb. 15: Small amount of granulation tissue in anterior commissure. March 1: Growth gradually became less. Nov. 18: No sign of recurrence, adventitious band in place of right cord, mobility excellent and at present only difference is that vocal process is missing on right side.

DISCUSSION.

DR. EMIL MAYER: Dr. Faulkner's case reminds me of one I reported some years ago, a gunshot wound. The fellow was at the battle of El Caney, lying on his face, and was shot by a sharpshooter. The bullet went through his frontal sinus. It was regarded as a glancing wound. He told me afterward that a piece of meat was hanging out of his mouth and that he flung it away. He was taken on board the Senaca and a tracheotomy was done at Bellevue later, and then I saw him. The ladies interested in the soldiers got Dr. Asch to look after him, and I happened to be in Dr. Asch's office at the time. Dr. Asch asked me to look at the patient; I saw a hole in the posterior part of the soft palate; and he said he was lying down when shot (describing the tract of the bullet, Dr. Mayer said it had entered the frontal sinus, smashed through the jaw, cut out a piece of the soft palate, comminuted the thyroid cartilages, dropped spent into the esophagus and passed out of his bowels two months later).

There was a man with an occlusion in his larynx which was complete. We got working on intubation; Kelly Simpson and John Rogers had been working on that, and we succeeded in introducing an intubation tube which would not slip out—putting it in and putting a red hot applicator in the hole of his trachea, etc., and then Ermold made a screw piece, and we had the rectangular tube in situ; but how were we going to get an intubation tube in? I had to devise a hollow introducer to be inserted in the tube, which was large, and then the man was breathing for 20 minutes through my fingers, and we got the thing in situ. I showed the man subsequently, and some of you may have seen him at the meeting of the A. M. A. At any rate, the man was all cleared up. He came to my office and the wound was all closed. There was a little tissue hanging there, and I thought I would take it out, and I did so, and immediately the man got blue in the face. I rushed to my instrument case, took out a knife, and plunged it unsterilized into the cicatrix, and he breathed, and I put in the tracheotomy tube, and I never saw him again. What had happened? I could only guess—the U. S. army pays a man \$50 a month if he is completely incapacitated, and he was not going to lose his job. I may be wrong at that—I don't want to do an injustice.

DR. C. J. IMPERATORI: Speaking of Dr. Faulkner's case, I feel that Jackson's technique is to be preferred. The wound should be left open, simply bringing the two upper and lower edges together. If that is done, it is rare to have this granulation tissue that Dr. Faulkner spoke of and thought was a possible recurrence. Insofar as closing the wound entirely, I do not think it is as good practice as leaving the wound entirely alone. In that way you avoid tracheotomy.

Myxoma of the Larynx. Dr. Harmon Smith (presented by Dr. A. M. Street).

S. D., born in Berlin, Germany, age 46 years, has been hoarse since birth but the trouble has been exaggerated in the last 15 to 18 years and has been considerably worse in the last week or so. She never had any pain or throat trouble other than hoarseness, and never had her throat examined until her physician was consulted for pain in her right side, and asked to see her throat. She was then advised to see a specialist. She has been losing weight, probably due to worry about her throat.

She came to the Manhattan Hospital on March 25, 1929. Examination revealed two large polypoid masses attached to the true cords on the border line, in the anterior commissure, the left being considerably larger than the right. On forced phonation, these two growths lie above the cord; on inspiration they fall between the cords. There was nothing in the nose or pharynx bearing on the case.

The interest of the case lies not in the presence of the growths, but in the time of their existence, their size, and the inattention to the hoarseness incident to their presence. Removal by the indirect method will be pursued, after which there is every reason to expect a return of her voice to nearly normal.

Hereditary Hemorrhagic Telangiectasia. Dr. John Lore.

Miss M. R., age 21 years, was first seen by me on Aug. 11, 1926, whose chief complaint was recurring nose bleeds. In addition to this, she had considerable nasal discharge, susceptibility to head colds and pains in the back of the head. At that time no other history was elicited. Nasal examination showed considerable mucopus in both nostrils. Her septum was only moderately deviated.

A diagnosis of ulcers of the septum, chronic sinusitis and deviation of the nasal septum was made. The ulcerated areas were cauterized with silver nitrate solution (100 per cent), but this did not influence the bleeding. On Aug. 26, both antra were irrigated. The left one contained foul pus. The next day a submucous resection and left intranasal antrum operation were performed. She did not bleed again until Oct. 11. At this time a more careful history was taken. It was determined that other members of her family (on her mother's side) were subject to the same nose bleeds (her mother, her uncle and a sister). Her menstrual period was only of one day's duration. Realizing that we were dealing with a case of hereditary hemorrhagic telangiectasia, a careful inspection was made. The lesions on her septum had the appearance of spider navi. Telangiectatic spots were noted on her tongue, lips, hard palate, dorsum of right hand, left arm and back.

Radium treatment was advised and accepted. She, at first, reported considerable improvement, but the spots were about the same. On Feb. 22, 1928, she was seen again, at which time she stated that she had had severe bleeding from the right nostril. It was noted that some new spots had appeared on her chest and hands. Her nose showed considerable pus and crusts, and just touching a crust would start her bleeding. On April 10, she was seen again, at which time she stated that she was bleeding as much as ever. The results of the radium treatment had been temporary. She still has considerable crusting in her nose and was reluctant to have them removed because of the bleeding, which was sure to follow.

As stated by Charles M. Williams (Archives of Dermatology and Syphilology, July, 1926, Vol. 14, pp. 1-3), "the essentials of the disease are as follows:

"1. The occurrence of nose bleed in childhood, often recurring throughout the life of the patient and sometimes associated with bleeding from other mucous membranes, or even, after traumatism from the skin. The bleeding may decrease as the patient grows older or may become more and more serious and finally prove fatal.

"2. The development of telangiectasia, sometimes as dilated capillaries, sometimes as a network of dilated venules, more characteristically as spider nevi; occurring sometimes in youth, more often in adolescence, or adult life, and usually increasing with the passing years.

"3. The occurrence of these symptoms in several members of the family, usually the same individual, presents both groups of symptoms, but sometimes one group or the other may be missing in an individual case."

DISCUSSION.

DR. IMPERATORI: My experience with hereditary telangiectatic hemorrhage is, as Dr. Loré said, that even with radium the results are very poor. You may destroy one telangiectatic spot but within a month or two others will appear. These patients bleed profusely, in my experience, and I have had no results from any therapeutic agents. I am in the same state as Dr. Loré as to what is the proper treatment.

DR. F. N. SPERRY: We had a case in which we did a blood platelet count and found it low; we subjected the woman to ultra violet ray treatment and the count came to normal, and the patient recovered, with no more telangiectasia.

Periesophageal Abscess. Dr. John M. Lore.

W. Z., male adult, was first seen by us at the Manhattan Eye, Ear and Throat Hospital on March 16, 1929. The history which he gave was that about four weeks before this date he had swallowed a chicken bone, which

he thought had lodged in the right side of his throat. He experienced a sticking pain and difficulty on swallowing. He consulted one doctor, who told him not to worry as the discomfort was probably due to an abrasion caused by the bone. But the pain increased. He therefore was examined again. An X-ray of his neck region was taken but no foreign body was seen. He also informed us that he had had a direct examination made (later found to be by means of the Hasslinger directoscope). About two weeks before admission, he began to spit up pus, and about one week later he began to develop considerable swelling on the right side of his neck.

Examination on admission revealed the following: A male adult, about 45 years old, looked acutely ill. He had limitation of neck movements. From a region back of the posterior border of the right sternocleidomastoid muscle to the anterior border of the same muscle on the left side, and from the right clavicle below to the level of the hyoid bone above, was a brawny, hot, tender swelling. No definite fluctuation was present.

Examination of the laryngeal region by the indirect method showed considerable foul pus bathing the right side of the larynx. The right pyriform fossa was completely obliterated by swelling. There was no paralysis of the vocal cords. He was immediately X-rayed, but no foreign body was seen. A speculum esophagoscopy was performed. An opening in the external wall of the right pyriform fossa was found, from which thick, foul pus poured out. Mesial to this there appeared to be a rather large tear. Careful inspection of the region revealed no foreign body. The region back of the larynx and beyond the cricopharyngeus was explored but except for considerable swelling, nothing was found.

A suction cannula was introduced into the sinus tract, aspirating considerable pus. As a result of this, his temperature dropped about a degree from 102°.

On March 15, another speculum esophagoscopy was performed, with the same findings as noted above. The swelling in his neck had, in the meantime, increased. Realizing that he had insufficient drainage, we decided to perform an external section. Therefore, on March 16, he was operated upon, using solution novocain 1 per cent. The entire swollen area was blocked. An incision was then made along the anterior border of the right sternocleidomastoid muscle, down to the deep fascial plane. At this level a well encapsulated, fluctuating area was found, which on opening evacuated a large amount of thick, foul pus. This abscess cavity was found to be anterior and internal to the carotid sheath and extended across the median line for about 1 c.m. No foreign body was found. The lower part of the abscess cavity, which dipped below the level of the clavicle at one point, was packed with iodoform gauze strip. Two rubber tube drains were inserted in the wound. The usual dressings were then applied.

His convalescence was uneventful. The swelling gradually subsided and his temperature came down to normal. The right pyriform fossa began to assume a more normal appearance.

When he was discharged from the hospital the neck wound was healed. There was still a little induration present, however. His pyriform fossa appeared normal. He complained, however, of a little difficulty in swallowing.

A few days ago, when he was last seen, we were surprised to find a left recurrent laryngeal paralysis. He still had slight difficulty in swallowing. A speculum esophagoscopy was suggested, but the patient was anxious to go to work and it was deferred to a later date.

What caused the recurrent laryngeal paralysis on the opposite side is difficult to say for sure.

The possibility of a stenosis developing must be borne in mind. Also the possibility of the foreign body still being present.

DISCUSSION.

DR. IMPERATORI: I saw the patient at the Bronchoscopic Clinic and felt that the patient should be operated upon by the external operation; without that, the patient would have died, and I advised Dr. Lore to go in on the posterior border of the sternomastoid muscle, but he felt that the greatest fluctuation of the deep mass was anterior, and the result showed that that was the proper procedure. My experience with these cases of periesophageal abscess is that almost 80 per cent of them have been fatal, the abscess having eroded into the

blood vessels and the patient dying from hemorrhage. As to the total paralysis that he has now, that undoubtedly is due to cicatrization, as the Doctor has explained.

DR. M. C. MYERSON: The subject of esophageal affections is of great interest to me. Periesophageal abscess is the direct result of perforation of the esophageal wall by a sharp object, most usually a fish or a chicken bone. I have learned that it is neither to the patient's benefit nor to the advantage of the attending physician to temporize with these cases. If after a single endoesophageal manipulation the patient does not show signs of recovery, external operation should be considered. In a fair series of cases I have obtained good results with an anterior incision. It would seem that the posterior incision is equally desirable, for most of the surgeons favor this incision on a basis of the anatomy involved.

Walling off of the mediastinum is a serious matter. It seems to me that despite the fact that the cellulitis apparently progressed to the other side, that the abscess which Dr. Lore encountered was well localized. This I believe to be the case, because the patient was expectorating pus. When Dr. Lore encountered the abscess, as he did, to my mind it was not necessary to wall off the mediastinum. I think the practice of walling off the mediastinum is perhaps a little overdone. Due credit should be given those who advocate this procedure for it has its place. The walling off of the mediastinum by opening fascial planes below and packing with iodoform gauze would appear to be opening new channels for infections unnecessarily, in this case.

DR. H. E. ORTON: I have enjoyed these papers on bronchoscopy and have been very much interested in what Dr. Imperatori said. As regards Dr. Lore's patient of a nonopaque in the bronchus, will state that a number of years ago I had a similar patient referred to me, in which I did a diagnostic bronchoscopy and removed a vertebrae of a squab, which had been in the right bronchus for two years.

DR. IRVING GOLDMAN: Esophagoscopy should be attempted as an initial step in the treatment of periesophageal suppuration, to determine the type of lesion and if pus is seen coming from this lesion, to empty the infected area. Dr. Rudolph Kramer recently reported three cases of esophageal suppuration cured by endoscopic treatment. I saw a severe case treated by esophagoscopy with excellent results. The patient was a man of 53 years, who developed a periesophageal abscess following esophagoscopy for diagnosis. He was acutely ill, toxic, was unable to swallow, and had a high temperature. He had a large, tender swelling occupying the left side of his neck, displacing the trachea to the right. Upon esophagoscopy a tear was found in the hypopharynx behind the left arytenoid. The lips of the wound were separated, the abscess cavity entered and pus aspirated. The edges of the wound were removed with punch forceps. Following this procedure, the patient brought up foul-smelling pus for several days. The general condition of the man improved rapidly. The swelling subsided, the fever came down in a few days and he was able to swallow.

DR. FRANCIS W. WHITE: I saw this case of Dr. Lore's. Some time ago, I had a similar case, though not quite so extensive, which I reported before the Section. My patient was a male, age 45 years, who had swallowed a piece of bone, which stuck in his throat. Upon examination of the pharynx, a small, pointed granulation could be seen in the right side just below the cricoid cartilage. He was much impressed by the diagnosis of cancer and tuberculosis given elsewhere and refused to be operated upon. After several days, however, he returned and gave a history of having coughed up a piece of bone, $1\frac{1}{4}$ -inch in size. There was no improvement in the neck condition. He was operated upon, the operation being expedited by introducing a blunt, curved instrument into the patient's pharynx in contact with the granulation surface and moderate pressure made. In this way it was easy to cut down and dissect directly to the internal opening of the abscess. Free drainage was obtained and both internal and external openings closed rapidly.

DR. LORE: As to the type of incision in the neck, you must be guided by the case. This case presented most of the swelling anterior to the sternocleidomastoid muscle, and that was where we incised.

As to treating them by repeated esophagoscopy, I think that is a mistake. You cannot temporize with these cases; you may be fortunate enough to get away with it, but not all the time. If you feel there is insufficient drainage into the esophagus, select the external route. Esophagoscopy in itself is always attended with a certain amount of danger, and these patients will not stand much.

I feel as Dr. Imperatori does, that you cannot temporize with these cases.

Sarcoma of Arytenoids and Epiglottis. Dr. V. G. Smith.

The patient, a man aged 56 years, came to the hospital on May 11, 1927, on Dr. Faulkner's service, suffering from hoarseness of four months' duration, cough, loss of weight (17 pounds) and dysphagia. X-ray examination showed marked infiltration of the right hilus, having the appearance of an old tuberculous involvement. Both apices fairly clear. Sputum was negative, and Wassermann reaction was negative.

Examination of the larynx, both indirect and direct, showed edema of the glottis, both arytenoids much infiltrated, especially the right, and much resembled tuberculosis of the larynx.

May 18: Biopsy shows chronic inflammatory granuloma. On the same day, 2,000 mg. K radium was applied to the neck for 20 hours. On the 26th, 100 mg. K radium was applied for 18 hours.

The appearance of the larynx remained about the same for a year; but on April 4, 1928, ulceration of the left arytenoid and thickening was noted. An X-ray of the chest taken on the same day showed the same condition as the year before. On April 14, the sputum examination was still negative.

A biopsy on April 17 reported as small, round cell sarcoma. Biopsies taken on April 27 and May 5 gave the same report.

Radium treatments were repeated on April 17 and 24 and June 14.

At present the larynx is nearly normal in appearance, with the exception of a small area of thickening at the posterior end of the right cord.

Radium Treatment: The radium treatments given your patient, Mr. M. M., approximate nearly 20,000 mg. hours of gamma radiation, all applied externally at a distance of 3.0 c.m. The details are as follows: May 18, 1927: 200 mg., 3 c.m. distan., .2 m.m. platinum, 1 m.m. brass for all treatments; 20 hours, 4,000 mg. hours, right side neck. May 26: 100 mg., 18 hours, 1,800 mg. hours, right side neck. May 16, 1928: 150 mg., 20 hours, 3,000 mg. hours, left side neck. May 24: 150 mg., 15 hours, 2,250 mg. hours, left side neck. June 15: 100 mg., 17 hours, 1,700 mg. hours, left side neck. Oct. 1: 300 mg., 13 hours, 3,900 mg. hours, both sides neck. March 8, 1929: 200 mg., 16 hours, 3,200 mg. hours, both sides neck.—G. Allen Robinson.

DR. J. I. KLEPPER: Why was not some radical surgery done — open the larynx and take it out?

DR. D. H. JONES: The patient presented clinically all the symptoms of tuberculosis of the larynx, but reports of the biopsies were all positive for sarcoma and the remarkable feature of this case is that the condition has cleared up.

Adenocarcinoma of Soft Palate. Dr. J. D. Kelly.

The patient, a woman, age 44 years, came to the hospital Feb. 4. Her family history was negative. She is the mother of four children; was born in France and came here 20 years ago. She came to the clinic because she was having difficulty in swallowing fluid—no interference after it got into the esophagus, but it did come through her nose occasionally. Examination showed an area on the left side the size of a silver half-dollar, indurated, and extending from the mid raphe to the anterior pillar of the left tonsil. There was a little tip of granulation tissue in the center of the mass; you could put your finger in the nasopharynx and by palpating could feel a convex surface, as well as see it in the mouth. She said that she had some trouble with swallowing five years previously, and had been operated on by some doctor, with relief. Apparently she was having no other symptoms, and was in good physical condition. We had a consultation, but no one could make a definite diagnosis. Then a biopsy was done and we found that it was an adenocarcinoma.

Dr. Robison gave her some radium treatment on April 4. It consisted of three 50 mg. radium tubes screened with .2 m.m. platinum and 1 m.m. of brass applied to the surface of the lesion for four hours, and again repeated eight days later, making a total of 220 mg. hours as a surface treatment.

The result was really marvelous, the area is reduced to almost half its former size during the three weeks that she had been under treatment. It is reported not as a spectacular case, but because it is unusual to find adenocarcinoma in that area, and also because of the marked result of radium applications in this particular type of carcinoma.

DISCUSSION.

DR. W. W. CARTER: I recall a similar case shown at a previous meeting—a case of epithelioid carcinoma of the uvula, in which I removed the entire mass for one-sixteenth of an inch beyond the growth and put in radium seeds in a semicircular formation above where the growth was. There was no recurrence of the growth two years after the operation, but the man subsequently developed carcinoma of the esophagus and died a short time later. As the lymphatic connection between the soft palate and the esophagus is most remote, we could hardly believe that some of the cells from the original growth had become lodged in the esophagus and started up the new growth there. What I wish to emphasize is the effect of radium on these growths. There was no local recurrence, although it was pronounced by Dr. Ewing, who did the pathological in this case, the most malignant of all the carcinomas.

DR. KELLY: Another point of interest in the case was that the reason we felt somewhat optimistic was that there was no glandular involvement; in view of her history that she had had some trouble of this sort four years previously when she was operated upon and after which she had apparent relief.

Report of Five Cases of Ozena Treated by Radium. Dr. Louis Hubert and Dr. G. Allen Robinson.

In order to avoid needless repetition in the history of each case, we wish to emphasize that the cases reported here are typical ones of atrophic rhinitis with ozena. Cases of suppurating sinusitis with foul odor, which disappeared after operation on the sinuses, are not included.

Case 1: T. S., female, age 18 years, Hebrew, born in Austria, came to the Manhattan Eye, Ear and Throat Hospital, clinic of Dr. McCullagh, on November 10, 1923, complaining of a foul odor from the nose. This odor, not perceived by herself, was present as long as she can remember. There was no history of lues, tuberculosis, injury or operation. Her nasal sinuses appeared to be clear. The usual cleansing treatment of ozena was unsatisfactory. One day she complained to us bitterly that she cannot meet any friends on account of her foul odor and that even members of her own family were complaining of her fetor. We suggested to her to try radium treatment. On Jan. 8, 1924, she had the first treatment. Altogether, she received five treatments, a total dosage of 277.5 mg. hours. The odor disappeared, crust formation was much less, and whatever crusts were present could be removed with great facility. On Feb. 5, 1925, no odor was perceptible. There was some dryness of the nasal mucous membrane, some scab formation, but she was married now and felt happy.

Case 2: M. W., female, age 18 years, born in United States, came to the clinic on Oct. 29, 1927. She complained of a foul odor and crust formation since birth. No history of lues or tuberculosis. She had a mild hyperthyroidism, with a small enlargement of the thyroid gland, a pulse of 114, a tremor of the tongue and the outstretched fingers. As her nasal sinuses, especially the antra, were diseased, a double intranasal antrum operation was done. The foul odor persisted. She then received seven radium treatments, a total dosage of 910 mg. hours. During the treatment, her foul odor practically disappeared, there was less scab formation, and a general improvement in health and well being. She also got married.

Case 3: T. C., female, age 19 years, born in United States, came to the clinic on Jan. 6, 1924, complaining of a foul odor, one year's duration. First radium treatment was given Jan. 17. Patient has improved after first treatment, but did not come to the clinic for further treatment until April 13, 1925. Her foul odor returned. She then received five more treatments, a total dosage

of 428 mg. hours. Her condition was improved. There was only slight odor, and slight scab formation.

Case 4: H. M., female, age 16 years, born in United States, came to the clinic on June 20, 1927, complaining that she had been unsuccessfully treated for ozena, including operations on her nasal sinuses, for the last five years. After two radium treatments, a total dosage of 400 mg. hours, the bad odor disappeared. When last seen, on March 4, 1929, there was no bad odor from her nose.

Case 5: J. G., male, age 19 years, born in Italy, came to the clinic on Dec. 4, 1928, complaining of a foul odor from the nose for the last five years. The first treatment of radium was given on Dec. 12. Altogether, he received three treatments, a total of 650 mg. hours. The odor was first diminished and then disappeared. There was slight crust formation.

Of the five patients treated with radium for ozena, two were 17 years, two were 18 years, and one was 19 years old. The average number of treatments have been five, using a mild erythema dose of approximately 100 mg. hours per treatment. The screenage of the radium has been .2 m.m. platinum, 1 m.m. brass, thus giving only gamma radiation. Decided improvement was noticed after the second treatment. The details of the treatments are as follows:

Jan. 8, 1924: Trixie C., age 18 years, five treatments, 277.4 mg. hours.

Jan. 17, 1924: Theresa C., age 17 years, six treatments, 428 mg. hours.

Feb. 23, 1928: M. W., age 18 years, eight treatments, 910 mg. hours.

Dec. 10, 1928: H. M., age 17 years, two treatments, 400 mg. hours.

Dec. 20, 1928: J. G., age 19 years, three treatments, 650 mg. hours.

DISCUSSION.

DR. R. W. FOWLER: I think that anyone who brings forward a suggestion which will help these sufferers from ozena should be given great credit as a benefactor of humanity. I once studied ozena for some time and suffered the discomfort of those who study this disease, and some years ago reported my findings, which were very satisfactory. As Dr. Hubert said, these cases are not always fully cured, for there is quite a difference between getting rid of the symptoms and curing a case. Dr. Hubert has done something which is worthy of practice.

DR. J. M. LORE: I would suggest removing a small piece of mucous membrane before and another small piece after treatment, in order to discover what has taken place in the glandular structure.

DR. JOHN HORN: I have been using Carlsbad salts. One does not know where that originated, but there must be something in the salts. In the last few months I have used it for irrigation of the sinuses and have had some splendid results, the crusts disappearing. Before I use Carlsbad salts I use an antiseptic solution and then proceed to clear out as much as possible, and then again irrigate with the Carlsbad salts, and I am getting good results. I have tried it out on four cases.

DR. J. I. KLEPPER: My experience is that most of these cases are due to antrum disease. I do the operation and find that it helps them quite a good deal, for you keep the antrum open, and it helps the commissures in all the cases that I have under observation.

DR. HUBERT: Replying to Dr. Lore's suggestion, we don't like in these atrophic cases to take out any more tissue than we can help, but it is a good idea from the scientific point of view.

Malignant Transformation of a Myxomatous Polyp. Dr. G. Allen Robinson.

Mrs. M. W., age 57 years, was admitted to Dr. Harmon Smith's clinic at the Manhattan Eye, Ear and Throat Hospital on July 16, 1928. The chief complaint was obstruction on the right side of the nose. A month before, the patient had been treated for an acute purulent antritis. Examination revealed a large myxomatous polyp filling the right side of the nose and extending into the nasopharynx. The pathological report showed a gelatinoid mass covered with a thin-surface mucosa. There was an acute inflammatory exudate present with edematous fibroblastic connective tissue.

Five months later the tumor recurred as a deep purplish spongy, bleeding mass filling right nasal cavity and protruding into the nasopharynx. After the

insertion of gold radon implants to check the bleeding, the tumor was removed and examination revealed large, thin-walled blood vessels and lymph channels separated by edematous fibrous connective tissue which was also hemorrhagic. The diagnosis of cavernous hemangioma was made. One month after the second operation friable masses of tumor tissue reappeared and microscopic section showed fibrillar connective tissue, numerous blood vessels, many large vesicular fibroblastic cells, some of which showed mitosis. There was also a round-celled infiltration. The diagnosis of angiofibrosarcoma was made. Further radium treatments have been given and there is no visible evidence of new growth at this time.

Polypoid outgrowths often appear, due to edema and chronic inflammation, causing various degrees of hyperplasia. It is rare, however, for a malignant transformation to take place in myxomatous polyps. I wish to acknowledge with thanks the assistance of Dr. Eggston for the pathological reports, and that of Dr. Farr and Dr. Munroe, who helped me in the treatments of the patient.

Aneurysm of the Anterior Superficial Temporal Artery. Dr. Carl H. Fornell.

The following case is recorded because of the unusual site of the aneurysm and the relative infrequency of such a lesion. The patient was a white female, age 62 years, single, a laundry worker. On March 26, 1927, she was accidentally pushed against a bundle of clothes and, in falling, bruised the right side of the forehead and the right eye. Patient received some local treatment at the time of the accident, but the swelling in the region of the right forehead remained. There was no bleeding from the mouth, nose or ears and the patient was not rendered unconscious. She did not return to work after the accident and seemed extremely nervous.

Examination on April 4, 1927, showed a swelling the size of a half-dollar on the right side of the forehead, just above the right eye. This swelling was quite firm and slightly tender; it did not appear to be connected with the bone and there was no tenderness in the region proximate thereto. There was considerable discoloration over the right side of the forehead, extending above and below the right eye. X-ray examination did not reveal the presence of a fracture. Examination of the right eye was negative. At this time a tentative diagnosis of hematoma was made.

On April 18, 1927, examination still showed the presence of a rounded tumor, about the size of an olive, in the right temporal region, freely movable. The appearance of the mass was suggestive of a sebaceous cyst because of the hardness and the free mobility. There was still slight fading ecchymosis about the swelling, extending almost to the right malar bone. Although the diagnosis of hematoma was still held, it was thought best to explore with a needle before attempting surgical interference. A medium-sized needle was inserted into the tumor and a 20 c.c. syringe quickly filled with blood without any change in the size of the tumor. The bleeding from the puncture hole made by the needle was easily controlled by pressure. Palpation at this time revealed expansile pulsation. A diagnosis of aneurysm was then made.

On April 26, under 1 per cent novocain anesthesia, the aneurysm was excised. The wound was sutured and subsequent examination six months later showed a 1-inch scar remaining, that was scarcely perceptible, due to the natural wrinkles of the forehead.

Physical examination of the patient at the time of the accident revealed nothing of moment, except that she showed considerable ageing. On palpation, the blood vessels were somewhat firm and inelastic. There was also a fine tremor of the extremities. The Wassermann reaction was negative. The urine showed a faint trace of albumin, with a specific gravity of 1.012.

DISCUSSION.

Aneurysms of the external vessels of the skull are extremely rare and are practically always due to trauma, although arteriosclerosis probably constitutes a predisposing cause, since the lesion is found practically only in persons of advanced years. Aneurysms in this region are usually small and are easily treated by excision, the anastomoses in the collateral circulation of the scalp being fairly abundant.

Blindness Due to Hemorrhage Into Orbital Fat Caused by Injury in the Intranasal Ethmoid Operation and by Other Injuries. Operation for Its Relief. Dr. J. E. MacKenty.

Since 1924 I have seen, in my own practice and in consultation, seven cases of hemorrhage into fatty capsule of the orbit immediately following the operation for exenteration of the ethmoidal cells. In four cases, my own (and maybe in all) hemorrhage occurred during and after the ethmoid operation, necessitating nasal packing. The orbital symptoms were immediate and characteristic: Ecchymosis of the eyelid and suffusion of the conjunctiva rapidly followed by exophthalmus, going on, if not relieved, to an extreme degree—extrusion of the conjunctiva, fixation of the globe, total blindness.

Examination of the Eye: The nerve is dead-white and the calibre of vessels almost obliterated. A few hours after the relief of pressure by operation, nerve becomes normal and vessels almost normal; *i. e.*, if operation is done at once.

In my own patients, bleeding during operation was excessive, and in two there was a history of bleeding, one requiring transfusion. In these four patients, tight nasal packing had to be used, which I believe was a factor in damming the blood into the orbit.

In my own cases the difficulties of the ethmoid operation were unusual. In all, the os planum was broken through and periosteum of the orbit was torn.

In the first one observed, in 1924, a delay of 12 hours followed the accident before the relief operation was done, as we had no previous orientation on this condition. In the others, the relief operation was done at once before the exophthalmus became extreme. In all, normal sight was restored.

In the three patients seen in consultation, three days and two days and 36 hours, respectively, elapsed before relief was attempted. The operation failed to restore the sight.

The conclusion is that relief must be immediate. When in doubt, have fundus watched by ophthalmologist and if even slight changes are observed, operate at once. Nasal packing is dangerous if the fatty capsule is opened.

Operation: 1. Usual external frontal sinus incision. 2. Lacrimal bone and os planum exposed well back, orbit displaced outward and orbital periosteum exposed almost as far back as the optic nerve. 3. A long anteroposterior slit is made in the orbital periosteum, exposing orbital fat filled with blood. The blood does not accumulate in one area but spreads through the entire fatty capsule. 4. The orbit is then massaged and squeezed in a backward direction and suction applied through the slit in the capsule. When operation is done early the blood can be extracted and the eye replaced, but in the late operations this cannot be done—may be due to invasion of infection. 5. The break through the os planum is enlarged. 6. A serous woven gut drain of large size is placed through the slit in the capsule and brought out externally. The wound is closed. No deformity occurs. If operation is early, sight returns within 24 hours. If late, the prognosis is very grave.

I would recommend this procedure in all eye injuries in which hemorrhage into the apex of the orbit may cause blindness from pressure or stretching of the optic nerve—such as direct injury from a blow.

DISCUSSION.

DR. C. J. IMPERATORI: The complication of hemorrhage into the fatty capsule, I have seldom seen. However, as Dr. MacKenty states, these cases have usually followed to the lamina papyracea injury and the cases were all packed. The procedure consists in irrigating the patient's nose with ice water, immediately following the operation, placing him in bed semi-upright, and spraying the nose with thromboplastin and adrenalin about once every half-hour. I have followed that method with the ethmoid operation and have had none of these complications. Following a practice similar to that used at Mt. Sinai Hospital, no packing is ever used in the routine ethmoid cases.

DR. IRVING GOLDMAN: Several years ago, I had a similar experience. I was doing an intranasal operation on the sinuses under local anesthesia. I had opened the sphenoid, exenterated the ethmoid, and then proceeded to make an opening into the antrum. As I did this, a hemorrhage occurred, which was so marked that I had to pack the nose. Immediately thereafter, the patient's

eye became proptosed and he complained of inability to see. Examination of the fundus disclosed a dead-white nerve head and empty retinal vessels. The packing was immediately withdrawn. Following this, the eye receded, fundus was again examined and found to be normal. The patient was asked to read the time on a clock which was situated about 20 feet away, and he did so readily. Had this operation been performed under general anesthesia and the packing left in place, blindness undoubtedly would have followed.

Dr. MACKENTY: My own cases were packed and the hemorrhages were such that I do not believe treatment suggested by Dr. Imperatori would have had the slightest effect upon controlling them. Occasionally in doing a radical operation we may break into the orbit and if packing is not used this makes no difference. The packing dams the blood back through the opening into the orbit. I have heard of one case in which no packing was used and the above condition occurred just the same. Any man who says that the patient should not be packed for hemorrhage after an ethmoidectomy has probably done very few ethmoidal operations, since anybody having much experience in these cases knows that the hemorrhage may occasionally be extremely severe and difficult to control, even with the most careful packing. I do not believe that Dr. Imperatori's method could have much effect upon the bleeding, but I do believe that it might be detrimental to healing.

Peritonsillar Abscess First Seen Two Weeks After Radium Treatment of Tonsils; Prolonged Convalescence. Dr. Samuel McCullagh.

I report the following history merely to counteract the impression derived from reading case reports that the destruction of tonsils by radium is a simple, painless procedure:

March 11, 1929: Mrs. C., age 25 years. X-ray treatment of tonsils 19 and 18 days ago. After a lapse of one day, three radon seeds (?) were implanted in the left and two in the right tonsil. From the left tonsil one slipped out about eight hours and one about 18 hours after insertion. The others were removed about 20 hours after insertion.

Pain was present during the time the seeds were in situ and has since continued without cessation, combined with marked soreness and dysphagia, for an interval of 16 days. The tongue was swollen. For the past three days pain has also been referred to the right ear.

Examination showed a marked swelling of the right side of the soft palate, which pushed the tonsil down and in. There was a suspicion that the deformity might be due to a solid tumor as there was none of the characteristic redness and edema of a peritonsillar abscess. Digital examination revealed fluctuation and upon incision at least $1\frac{1}{2}$ oz. of pus were evacuated. The cavity extended as far down as the lower pole of the tonsil. There were localized areas of ulceration on each tonsil, apparently where the seeds had been implanted. The anterior pillar of the left tonsil was buttonholed and indurated.

In spite of drainage, the pain and soreness persisted for almost two weeks longer and complete healing did not occur until 17 days after the original incision. When last seen, six weeks after her first visit to me and eight weeks after the radium treatment, there was still an area of ulceration on the left tonsil. She says she was told her tonsils were moderately large and ragged. They still are.

The question is, whether this abscess was due to a puncture of the capsule by the seed, carrying infection into the retrotonsillar area; or whether, as suggested by Dr. G. A. Robinson as a possible explanation, a local necrosis due to the caustic action of the beta rays, occurred with superimposed infection. There is no doubt of the occurrence of pain and dysphagia long before the development of the abscess.

DISCUSSION.

Dr. DUNCAN MACPHERSON: A few years ago, I tried out radium treatment in the Post-Graduate Hospital. I had two or three cases where we did not have abscess which had ulcerations; another had inflammation for a considerable length of time. Dr. Jones tried out a number of cases; he implanted radium seeds and at various times removed and had them submitted to laboratory tests; there were no results, they all seemed to be inert.

In view of Dr. Williams' late report from Boston on radium treatment of the tonsil, it seems we must have worked in the wrong way, for he extols it very highly. I don't know whether or not Dr. Robinson has tried it or not, but we implanted these seeds according to Dr. Moore's directions and that was what we got; it must have been wrong, for Dr. Williams' report is very favorable.

DR. G. A. ROBINSON: In the treatment of a large number of cases of chronic tonsillitis, localizing the radium in the tonsillar tissue by means of platinum radium needles, gold or platinum radon implants, a definite shrinkage of the lymphoid tissue had been noted two or three months after the treatment. I do not believe it is possible to entirely eradicate the infection by radiation. Where possible, surgical removal is still the treatment of choice. Radium treatment should be reserved for those cases of definitely infected tonsils in which the patient has a high blood pressure, diabetes or cardiac disease.

DR. MACKENTY: I do not attempt to criticize radium in other fields, but I am convinced that in our field it has very little value and is decidedly pernicious in cancer of the larynx, since its use delays surgical removal and seriously handicaps surgical effort, when applied after the tissues have been burned with radium. An interesting case in parallel with Dr. McCullagh's experience was in a woman, who, having radium applied to her tonsils, developed a very painful neuroma in the glands of the neck. One surgeon attempted to remove this growth and failed. She is now considering a second attempt. The history shows that a severe radium burn in the tonsils was immediately followed by this growth in the neck. No doubt there is some connection between the two.

DR. J. COLEMAN SCAL: I have treated over 150 cases of diseased tonsils with radon seeds and have never had a single peritonsillar abscess. Over 100 of these cases were treated at the Beth Israel Hospital. The only way that I can account for the peritonsillar abscess is that the radon seeds were implanted into the peritonsillar tissue instead of the tonsil.

DR. MCCULLAGH: I have nothing to add except to say that when the tonsils are removed later, I will submit them to the pathologist for examination.

Exophthalmos Due to Exophthalmic Goitre, Complicated with Frontal Sinusitis and Orbital Abscess. Dr. Francis W. White.

J. S., age 50 years, referred to Dr. McCullagh's clinic from Dr. Kinney's clinic (eye department). Four months previously, the patient fell out of a first floor window on her face, cutting her face with the eyeglasses. She was unconscious for an hour. Two weeks later, there was bulging of both eyes, the left more so than the right. O.D., 20/30; O.S., 20/40. A diagnosis was made of exophthalmic goitre, with classical symptoms. Intranasal examination did not aid greatly. The sudden increase in the bulging of the left eye, tenderness and edema over the left frontal region, headache, X-ray findings, and a history of nasal discharge of several years' duration, all pointed to orbital abscess.

No relief being obtained by simple removal of the anterior tip of the middle turbinate, left, the patient was admitted to the ward. A Killian operation was performed on the left frontal; pus was quickly found. The orbital plate was destroyed and there was a communication with the right frontal through the interfrontal septum. Diseased bone was removed, the opening between the frontals enlarged and the right frontal sinus cleaned out as nearly as possible. Five months later, the right frontal was opened externally, with the hope of relieving the recurring headaches. Free pus was found. A large opening was made into the nasal cavity. Dr. Robinson had been treating the patient for hyperthyroidism by means of radium, reducing a pulse rate of 110 and 120 to 76 and 80, and a basal metabolism from 35 per cent plus to normal.

The points of interest in the case are: The hyperthyroidism, chronic sinusitis associated with exophthalmos, the sudden increase of the latter condition in the left eye after an accident, and the finding of the orbital abscess on the same side as the increased exophthalmos.

DISCUSSION.

DR. J. I. KLEPPER: I treated a case of maxillary-frontal sinusitis in a girl of 15 years; her mother had died about that time, and she was very nervous. I followed up the sinusitis and cleaned out the antrum; about that time her

neck began to throb, and Dr. Heyd operated. I don't think the sinuses had anything to do with it. Her pulse rate was 140, and her heart was affected. The findings in the case were: Eye disturbance, tumor of the goitre, and they found degeneration of the goitre.

DR. FRANCIS W. WHITE: I did not make the statement that this exophthalmos was associated with or caused by the sinusitis; I think it was an incipient hyperthyroidism made manifest by the accident, and then followed by protruding of the other eye because of the disappearance of the orbital plate.

Chronic Perichondritis of Thyroid Cartilage, etc. Dr. Arthur S. Willson.

The patient, a man age 35 years, was admitted to the service complaining of hoarseness and sore throat of a year's duration. On examination we found the larynx pinkish-red in coloring and the cord swollen. Yellow pus was exuding from the tonsil. He was a shipping clerk and had to call across the room a good deal and thought the condition due to that. Twelve days later he came to the hospital in great distress, so far as the breathing was concerned. We did a tracheotomy and he has worn the tube ever since. The larynx was blown up and in six weeks it looked similar to what it did on the first examination, though the cord did not move. There was no motion of the cords. We made all the usual examinations and all were negative—X-rays, sputum, etc. Dr. J. A. Miller saw him and could not make a diagnosis. He came in occasionally for inspection, and on Nov. 29 he came in with a pretracheal swelling. That was opened and discharged pus; then it opened and closed up again; I followed it up and down close to the thyroid cartilage, closed it, and it remained closed for two months, and again opened. He has gone through that performance ever since; every two or three months it becomes edematous and the landmarks become obliterated. We have given him therapeutic tests, and have done everything we could think, but nothing has been successful in curing him. I suggested taking out the subcord cartilage, but that did not seem feasible. I have looked up the literature but have not found any similar case reported. He had X-ray treatment before or after, but had had no treatment before he came to our clinic. Laryngectomy seems to be the only resort with any hope, yet that is a very serious thing to do.

DISCUSSION.

DR. J. E. MACKENTY: I followed this case of Dr. Wilson's with much interest; it is a very unusual case. I feel that chondritis of the larynx is very like that of the external ear—the chondritis will gradually destroy the cartilage of the larynx, during which time the patient will have recurrent abscesses. Therefore, we are up against the question of whether or not the patient should have a laryngectomy. He is a very young man and has a family to support. If we do a laryngectomy with a fatal result it would be most unfortunate; whereas, he can get along for a number of years, having these abscesses and getting temporary relief. I think we should keep him under observation a little longer and see what happens, rather than do a radical operation at present.

Nonopaque Foreign Body in Lung. Dr. John M. Lore.

The importance of a proper X-ray and fluoroscopic interpretation of findings in a case of nonopaque foreign body in the lung is illustrated by this case. This patient, a woman of over 50 years, stated that on Thanksgiving Day, 1927, she was having dinner with her family. During the act of laughing, she felt that she aspirated a bone. She immediately had paroxysmal coughing, which lasted for about one hour.

The next day she consulted a doctor, who assured her that there was nothing in her lung. However, she kept on coughing and soon began to run a temperature. As she described it, she began to develop a "sense of weight" in her right chest. The cough was nonproductive.

About two weeks later, she consulted another doctor, who treated her for bronchitis, but she noted no improvement. Her temperature kept going higher and the cough became productive. Shortly after Christmas, another doctor, whom she consulted, advised some X-rays. A fluoroscopic and X-ray study was made by Dr. I. S. Startz, who reported the probable existence of a nonopaque foreign body in the lower portion of the right lung. The X-rays showed marked infiltration, distal to the probable location of the foreign body.

I first saw her on Dec. 31, 1927. She came with the X-rays and the report from Dr. Startz. The history, together with the report of the Roentgenologist, definitely indicated a foreign body. She was admitted the same day to the Manhattan Eye, Ear and Throat Hospital with a temperature of 101° , which later went to 104° . Respirations, 20 to 32. Pulse, 90 to 124. Chest examination confirmed our suspicions.

On Jan. 3, 1928, she was bronchoscoped. A preliminary injection of morphin sulphate gr. $\frac{1}{4}$ and atropin sulphate gr. $\frac{1}{150}$ was given. Locally, sol. cocain $\frac{1}{2}$ per cent was used. A 5 m.m. Jackson bronchoscope was used. It was introduced directly into the right bronchus, following it right down to its terminal bifurcation. At this point granulations were seen, which bled easily. On using the suction tube to remove secretions which bubbled up from this point, a hard foreign substance, which gave the impression that one gets when probing exposed bone, was felt. By means of a small rotation forceps, introduced about $\frac{1}{2}$ c.m. beyond the end of the bronchoscope, this hard mass was again felt and then grasped. By using slight traction the mass was dislodged. Finding it too large to pull into the lumen of the bronchoscope, both the foreign body and bronchoscope were withdrawn. The foreign body was brought to the level of the upper teeth, at which point the mass was accidentally dislodged from the forceps. The patient promptly expectorated it. The convalescence was uneventful. Within a few weeks' time the chest condition had entirely cleared up.

Rheumatic Fever Following Tonsillectomy, with Recovery After Tonsillectomy. Dr. Robert C. Howard.

The patient, V. M., a man age 39 years, came to me on Aug. 9, 1926, complaining of inability to work for over two months, pains in various joints, fever and sore throat, which had developed in less than two weeks after a tonsil operation two months before.

He stated that his tonsils had been operated on because of occasional attacks of sore throat, but that he had never been troubled before with any form of arthritis or rheumatism. His past and family history were essentially negative. A man of rather robust build, he was pale, weak, moved his limbs with difficulty and showed other signs and symptoms of severe illness.

Nasopharyngeal examination revealed absence of uvula, distortion of soft palate; a stump of tonsil on the right side, 2 c.m. in diameter, badly infected, completely buried under dense scar tissue stretching across from what remained of the faucial pillars of that side; whereas, the left tonsillar stump was enormous, measured 5 c.m. across and was distorted into bazaar shapes by contracting cicatricial bands passing from it to the tongue, soft palate and faucial pillars of the left side. In the vault of the pharynx the adenoids were enlarged; on the tongue, the lingual tonsils were enormous, and there were strips of hypertrophied lymphoid tissue connecting these structures.

Operation: On Aug. 9, 1926, I removed, by routine local anesthesia technique, all the remaining lymphoid tissue of Waldeyer's ring. He stood the operation well and made an uneventful recovery.

When again seen after operation, four days later, practically all arthritic symptoms had subsided, disappearing entirely a little later and have not since returned over a period of nearly three years.

The etiological relationship of infections in the lymphoid tissues of the pharynx and especially of the faucial tonsils to rheumatism, in many instances, is too well established to need further elaboration at this time; but the unusual, orderly sequence of events in this case, namely, incomplete tonsil operation, followed in two weeks by acute rheumatic fever synchronously with the sealing up of the infected, clipped, tonsillar crypts by extensive scar formation; persistence of inflammatory rheumatism for nearly two months till the pus-laden, scar-covered, tonsil stumps were removed, followed by prompt disappearance of all symptoms, exhibits phases of regularity not often demonstrable with such precision in constitutional infections of focal origin.

(To be continued.)

